

DEFENSE INDUSTRY BULLETIN

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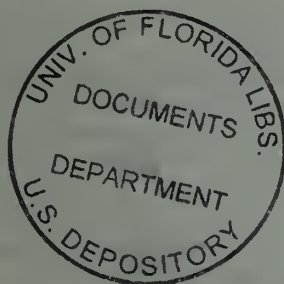
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Development and Production of the C-5A Aircraft Approved



Artist's Conception of the Lockheed Version of the C-5A.

Lockheed Aircraft Corporation has been selected as the prime contractor on the C-5A program. Approval to proceed with the development and production of this revolutionary new transport plane was announced by the Secretary of Defense on Sept. 30, 1965. (See story on page 1.)



DEFENSE INDUSTRY BULLETIN

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of Defense

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The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

The *BULLETIN* is distributed each month to the agencies of Department of Defense, Army, Navy, and Air Force, and to representatives of industry. Request for copies should be addressed to the Business & Labor Division, OASD/PA, Room 2E813, The Pentagon, Washington, D.C. 20301, telephone, OXford 5-2709.

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California Tops Prime Contract List for FY 1965

California received the largest dollar volume of military prime contract awards in Fiscal Year 1965 with a total of over \$5.0 billion. New York was second with over \$2.2 billion. Others in the top ten include Texas, Connecticut, Massachusetts, Missouri, Pennsylvania, Ohio, New Jersey and Georgia.

California and New York were also first and second respectively in Fiscal Year 1964. Georgia is the only new state in the 1965 top ten, replacing Washington which was in sixth place in Fiscal Year 1964. Six of the top 10 form a compact area in the northeast, namely Massachusetts, Connecticut, New York, New Jersey, Pennsylvania and Ohio. The other four are widely scattered—California in the far west, Texas in the southwest, Missouri in the midwest and Georgia in the south.

A detailed tabulation of Defense Department prime contract awards by State up to June 1965 is given in three tables beginning on page 22 of this issue. The tables cover the following:

Table 1—Net Value of Military Procurement Actions, Fiscal Years 1964 and 1964.

Table 2—Net Value of Military Procurement Actions by Department, July 1964–June 1965.

Table 3—Net Value of Military Procurement Actions by Fiscal Year: Fiscal Years 1964, 1964 and 1965.

NIKE-X Contract Awarded

The U.S. Army has awarded a \$221,216,696 contract to the Western Electric Company for continued development and testing of the NIKE-X missile defense system.

The cost-plus-incentive fee contract will cover work on the system from Oct. 1, 1965 to Sept. 30, 1966. Western Electric Company is the NIKE-X prime contractor.

NIKE-X is being developed as a defense against intercontinental ballistic missiles and submarine launched missiles. It is the only anti-missile missile system in advanced development by the United States and is a high priority Department of Defense research and development project.

Funds will be divided among several thousand firms which furnish goods and services for the NIKE-X development program. These firms are located in nearly every state of the Union.

Western Electric Company has major plants in Burlington, Greensboro and Winston-Salem, N.C., as well as in Lauredale and Allentown, Pa., with field offices at the test site.

Bell Telephone Laboratories is responsible for design and development of the system, with work centered at Whippany, N.J., and at the test sites.

The principle NIKE-X subcontractors and their locations are: Burroughs Corp., Plainfield, N.J., display system; Control Data Corp., Minneapolis, Minn., computer effort; Cornell Aeronautical Laboratories, Buffalo, N.Y., discrimination studies; Douglas Aircraft Co., Inc., Santa Monica, Calif., ZEUS missile airframe and engineering services; General Electric Co., Syracuse, N.Y., radar techniques and signal processing equipment; Martin-Marietta Corp., Orlando, Fla., SPRINT missile airframe and engineering services; Hercules Powder Co., Cumberland, Md., SPRINT propulsion; Raytheon Co., Wavland, Bedford and Andover, Mass., missile site radar and multi-function array radar development; and Sperry-Rand UNIVAC Div., St. Paul, Minn., data processing equipment.

Development and Production of C-5A Aircraft Approved

Secretary of Defense McNamara has directed the Air Force to proceed immediately to develop and produce a revolutionary new transport plane—the C-5A.

Lockheed Aircraft Corporation has been selected by the Air Force to develop and produce the C-5A. The four new fan jet engines for the aircraft, each capable of 40,000 pounds of thrust, are being developed and will be produced by the General Electric Company.

The development cost and the initial production order for 58 planes, including engines, will be about \$2 billion. The aircraft will be bought under a new contracting concept under which both the airframe and engine manufacturers will receive contracts covering not only development but also production. This far-reaching step should assure that this complex program will be carried out at the least possible cost.¹

Weighing nearly 350 tons, twice that of our largest military cargo plane, this giant new aircraft will be able to carry loads of a quarter million pounds 3,200 miles and loads of 100,000 pounds non-stop across the Pacific Ocean. It will be more than 230 feet long, 63 feet high at the tail and have a 220-foot wing span.

The C-5A will be able to land on unprepared airfields of 4,000 feet, thus permitting flights directly from the United States to points of crisis anywhere in the world. It will carry almost any piece of military equipment including tanks, trucks and helicopters. Sixteen three-quarter ton trucks or two M-60 main battle tanks will be transported in a single plane.

Ten C-5A's could have han-

dled the entire Berlin Airlift, which required more than 140 C-54's. During Exercise BIG LIFT in 1963, 204 transport planes making 234 flights airlifted 15,000 troops to Europe in 63 hours. Forty-two C-5A's could do the same job in only 13 hours.

This new plane, which will greatly improve our military capabilities, also will enable the United States to speed to the needy in time of crisis or disaster. During last year's food crisis in Pakistan, for example, C-130 aircraft made 76 flights over a 10-day period to deliver 952 tons of food. Seven C-5A's could do this in 18 hours.

The commercial implications of the C-5A are also significant. It could carry international air cargoes at a much lower cost per mile than present commercial planes.

One of the major objectives of the present Administration, and President Kennedy's Administration, has been to increase the mobility and reaction time of our military forces by providing more airlift. Since 1961 we have increased this capability by one hundred per cent. When the C-5A becomes operational in 1969, our airlift capability will be more than five times that of 1961. By 1972, it will be ten times what it was in 1961.

The Military Air Transport Service will then be able to move more people and heavier equipment over greater distances faster than ever before. The C-5A will give our defense team—with its other land, sea and air logistics systems—the means to respond more quickly, effectively and economically to a wide range of crises.

Civilians to Replace Military in Non-Combatant Jobs

A major new program has been established by the Department of Defense to speed up and to reduce the cost of the nation's military buildup. Large numbers of military personnel, now in non-combatant, support type assignments, will be replaced by civilians.

The initial phase of this far-reaching program calls for hiring 60,000 civilians during 1966 to do civilian type jobs now being done by military personnel. This will free some 75,000 officers and enlisted men for duties which must be performed by military personnel. The 15,000 difference represents manpower savings made possible by substituting "long-tenure" civilians for military personnel whose tours of duty are of short duration.

In announcing the program, the Secretary of Defense said that it would enable the Defense Department to make more effective use of national manpower resources. "This program," the Secretary said, "will not only permit acceleration of our buildup of military manpower, it will enable us to decrease the number of draftees otherwise required. It will also allow

a considerable reduction in the number of military people who will have their tours of duty extended involuntarily."

Support type positions where civilians can substitute for military personnel include administrative and clerical, supply and maintenance, medical, food service and transportation. Although some overseas positions are involved, by far the larger number will be within the continental United States.

A Manpower Utilization Board will oversee the initial phase of the program and develop plans for extending it beyond 1966. It will be headed by the Assistant Secretary of Defense (Manpower) and include the Under Secretaries of the Army, Navy and Air Force.

The Secretary emphasized that the new program is in keeping with President Johnson's desires that, in the present crisis, all military personnel should be assigned to duties for which there is a direct military requirement and that there should be no waste or misapplication of America's manpower.

¹ See article, "Effective Competition—A Key to Government Procurement," on page 3.

DSA Seeks New Suppliers

A new system has been established by the Defense Supply Agency (DSA) to encourage more firms in labor surplus areas to bid for Defense contracts.

Called Project SONS (Seek Out New Suppliers), the system calls for the listing of all procurements in excess of \$100,000 of which no more than two bids were received or no bids were received from firms in labor surplus areas.

The project has resulted in placement of additional contracts in labor surplus areas and has brought substantial savings to the Government through increased competition.

Firms interested in competing for the procurement of the items listed below should write to the Economic Utilization Specialists at the DSA Supply Center indicated. A code letter has been designated for each Center and the letter appearing after each item listed indicates the DSA Center which has primary interest.

Code Letter	DSA Supply Center
C	Mr. Ralph Sager Defense Construction Supply Center Columbus, Ohio 43215
E	Mr. B. L. Castle Defense Electronics Supply Center Dayton, Ohio 45401
F	Mr. K. Melvin Skaggs Defense Fuel Supply Center 801 19th St., N. W. Washington, D. C. 20305
G	Mr. Reed Randolph Defense General Supply Center Richmond, Va. 23219
I	Mr. Sidney Charles Defense Industrial Supply Center 700 Robbins Ave. Philadelphia, Pa. 19111
P	Mr. David Hoffman (Clothing & Textiles) Mr. Peter M. Babich (Medical) Mr. James L. Calvert (Subsistence) Defense Personnel Support Center 2800 S. 20th St. Philadelphia, Pa. 19101
List of Items	Code Letter
B&W Aerial Photographic Film, Nonperforated, MIL-F-32C	G
Electron Tubes, Types 6299, 6Y6GT, 7077, 7289, and 2K25	E
Sewing Machine, Industrial, FSN 3530-753-2874	G
Jam, #2½ size cans and 2 lb jars, Various FSNs	P
Boot, Combat, Tropical, DMS, MR, MIL-B-43154	P
Shoe, Safety, Neoprene Cork Sole, MR, MIL-S-41821	P
Tent Section, Frame Type, Cotton Duck, FMW&WR, OD, w/cover end assembly and intermediate assembly.	P
Shoe, Dress, Man's Oxford, Leather, Black IP/DES S-111-S	P
Refrigerator, Self Contained, Mechanical Commercial FSN 4110-194-1572.	G
Handcuffs	P
Sleeping Bag, Aircrew Survival, MC-1	P
Paper, Map, FSN 9310-274-3842	G
Allylbarbituric Acid Tablets, FSN 6505-962-4375	P
Shoe, Service, Man's, Water Resistant, Class I, Outsoles, 3-Eyelets, MIL-S-21894A (Navy) dtd 22 Jul 63.	P
Boxes Fiberboard, FSN 8970-577-4513	P
Cans and Lids, FSN 8970-577-4513	P
Cattlehide, Wet Salted for FTWR, Upper Leather, Type II, Class I, IP/DES-S-80-1 dtd 24 Mar 64.	P
Shoe, Dress, Man's, Oxford, Leather, Black, MIL-S-0013192D	P
Cheese Spread, Cheddar, FSN 8910-682-6761, 37 gram cans	P
Film, Photographic, Chemicals and Paper, Photographic MIPR R/65/916000-383NSF, FSN 6750 series.	G
Table, Operating, Hospital, Pedestal, Stock No. 6530-709-9005 Spec. MIL-T-001-6951B(IM) dtd 3 Oct 63.	P
Heater, Space, Size 2, w/air circulating fan, MIL Spec No. MIL-H-14516A, DTD 8 May 58.	C
Sirup, Imitation, Maple, FSN 8925-682-6705, 6706, 6708 #10 size can, #2½ size can, 1 lb 6 oz & pint bottle.	P
Boot, Combat, Service, Mildew Resistant, (MIL-5), Type I	P
Jellies, Fruit, FSN Various, #2½ size cans and 2 lb jars	P

Shortening Compound, FSN 8945-125-6338 and 8945-256-1314 5½ lb can and 5 gallon can.	P
Cargo Flyaway Bins, FSN 7125-682-5287	G
Glasses, Sun, Men's, Spectacle Type	P
Barbed Wire, Concertina, Mil Spec MIL-C-320, FSN 5660-371-9494.	C
Ice Making Machine. Cube, Automatic, electrical characteristics, 230 volts, 60 cycles, 1 phase AC, FSN 4110-837-6442.	G
Paper, Newsprint, cut sheets, size 32" x 42"	P
Surgeons' Disposable Rubber Gloves	P
Camouflaged Muslin Bandages, Various Sizes	P
Disposable Paper Cups for Specimens	P
Plastic Urine Collection Bags	P
Fronts and Temples for Spectacles	P
Bag, Water Sterilizing, Mil Spec MIL-B-273, FSN 4160	C
Pump, Dispenser, Hand Driven, Mil Spec MIL-D-43095, FSN 4830-276-0087.	C
Pipe, Bituminized Fiber, Fed Spec Fed-SS-P-356, FSN 5630, various sizes.	C
Insulation Board, Thermal, Fibrous Glass, Mil Spec MIL-I-742, FSN 5640.	C
Roofing Felt, Fed Spec Fed-SS-R-501, FSN 5650	C
Roofing Felt, Asphalt, Fed Spec Fed-HH-F-191, FSN 5650	C
Canteen Cup, Steel Corrosion Resistant	P
Poncho	P
Bed Sheetting	P
Potatoes, White, Instant, Granules, #10 size can, FSN-8915-164-6876.	P
Chicken, Canned, Boned, 5¼ oz can, FSN 8905-129-0823	P
Ham & Eggs, Chopped, 5½ oz can, FSN 8940-160-6815	P
Ham & Lima Beans, 11¼ oz can, FSN 8940-127-9650	P
Pork Steak, 5½ oz can, FSN 8905-132-6729	P
Beans, w/Frankfurters, 11½ oz can, FSN 8940-838-8273	P
Ham, Sliced & Fried, 5½ oz can, FSN 8905-170-8246	P
Beefsteak, 5½ oz can, FSN 8905-170-8244	P
Beef, Sliced w/Sauce, 5½ oz can, FSN 8905-641-8969	P
Beef Slices & Potatoes, w/Gravy, 11½ oz can, FSN 8940-281-3049.	P
Pre-fried Bacon	P
Applesauce, Instant	P
Post, Fence, Metal, FSN 5660-262-9914 and 5660-270-1510	C
Cotton Bedspread, Single, FSN 7210-753-2900	P
Cotton Hand Towels, White, 17" wide - 36" long, huck weave.	P
X-Ray Apparatus, Photofluorographic, FSN 6525-823-8058	P
Metal Buttons, Insignia, 25 line size and 36 line size	P
Saliva Ejectors, Dental, Plastic	P
Dressing, First Aid, Stock No. 6510-201-7455	P
Diesel Powered Fork Lift Truck	G
Electric Fork Lift Truck	G
Aircraft, Cockpit, Lights	G
Conduit, Rigid Metal FSN 5973-228-0052	
Mattress, Bed, Foam Rubber Padding, Spec MIL-M-18351C (Ships).	P
Potatoes, Sweet, Canned	P
Bandage, Cotton, Elastic, 3 inches by 5½ yards	P
Blueberries, Canned, Water Pack, No. 10 Cans	P
Urinals, Vitreous China, FSN 4510, BuShps Dwg 1385868	C
Insulation, Thermal, Pipe Covering, FSN 5640, MIL-I-2781	C
Pump, Centrifugal, 20,000 GPH, FSN 4320, MIL-P-17861	C
Posts, Fence, Steel, FSN 5660, MIL-P-20636	P
Flour, FSN 8920-680-2046 and 8920-125-9423	C
Lavatories, Assembled, FSN 4510, Fed Spec WW-P-541	C
Desalter Kits, Type II, FSN 4610, MIL-D-5531	C
Belts, "V", Auto, FSN 3030, MIL-B-11040	C
Cutting Edges, Angle & Dozer Blades, FSN 3830, MIL Standard 39103-39104.	C
Fittings, Lubrication (Various Types), FSN 4730, MIL-F-3541.	C
Sprayer, Insecticide, FSN 3740, MIL-S-52185	C
Padlock, Combination, Mil Spec MIL-P-17257B	I
Electron Tube, Klystron, Types 2K45 and 2K48	E
Electron Tube, Magtron, Types 2J50 and 2J51A	E
Electron Tube, Transmitting, Types 3X2500A3 and 4CX1000A	E
Apron, X-Ray. Protective	P
Sheath, Machete, Plastic	P
Coat and Trousers, Heat Protective, Safety	P
Crown, Support, Cap	P
Handkerchiefs	P
Overcoat, Wool, Man's	P
Sweater, Men's and Women's	P
Trousers, Men's, Wool, Blue, Melton	P
Swim Trunks	P
Uniform, Women's, Wool and Cotton	P
Pork Sausage, Canned, Links, FSN 8905-889-3756	P
Luncheon Meat, Canned, FSN 8905-126-4020	P
Beef, w/gravy, FSN 8905-582-1334	P

Effective Competition

A Key to Government Procurement

by

Robert H. Charles
Assistant Secretary of the Air Force
(Installations and Logistics)

Government procurement practice can be interpreted as the relationship between the Government and industry, in its broadest sense. About half of the entire \$50 billion Defense program and over 80 per cent of the \$5 billion NASA program is represented and therefore deeply influenced by that relationship.

Competition, coupled with incentives, has been the bedrock of our successful enterprise system. If one were to try to sum it up in a few words it might be said that: where there is competition, there might be failure; and it is this risk of failure that causes a man or an organization to rise to the peak of his skill. Our mental heartbeat is stimulated by the adrenalin of competition.

In spite of this, however, only a small fraction of our work is awarded on a competitive basis. And the necessary inference from these two facts—competition produces better results, and we have little competition—is one that will be unpalatable to most industry representatives, namely that defense industry is not operating at the peak of its talents.

And when I speak of competition as a spur to rising to the heights, I am not talking strictly about price competition. Low price is only a part and, in many cases, only a small part of what we want. What kind of a price tag do you put on the area rule?

Competitive bidding at one time was limited to the earliest phase in the acquisition of a new system. Because of the high cost of development and production, a single contractor was selected as early as possible to do the initial research and development including much of what we now call Contract Definition; and in carrying out this R&D

work, the contractor built up such a store of technical knowledge about this specific system that he became the only practicable source for further work. Meaningful competition in terms of responsible commitment concerning performance, schedule, or price was minimal because, before selecting the contractor, the system was so ill-defined that competitive comparability was virtually impossible.

In an effort to overcome this lack of comparability in development proposals, Contract Definition was introduced as a preliminary step preceding development proposals. Under this concept, pre-development contracts are awarded to two or three competitors to define more fully the system required to meet the mission; and at the end of this definition phase, each contractor submits a performance and price proposal for development of the system. Since these proposals are based on a greater degree of refinement and clarity in the Work Statement, they are



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more comparable and competition is more effective.

Even so, the role of competition is severely limited if it stops at this point and applies only to development, because the follow-on production, which is awarded without competition, can represent up to 85 per cent of the total program. This situation explains why only a small portion of the total awards of the Air Force are let competitively.

And so, in an attempt to make a quantum jump, we are now testing a plan under which the Contract Definition contractors will bid, not only on the development, but also on the production and a large portion of the support such as Aerospace Ground Equipment (AGE), spares, etc., in one package.

The total package concept is based on the premise that if we can define with reasonable accuracy what a system is to do, and if the major technological building blocks of that system are in hand, we can obtain competitive commitments concerning the performances and prices of what we really want, i.e., operational equipment. This will avoid the "Chinese auction" of the conventional system under which competitors for development contracts are tempted (if not in fact forced in order to be "competitive") to make irresponsibly low "buy in" bids, the extent of such irresponsibility varying with each competitor's estimate of the volume of changes or of subsequent production; and, of course, this salesmanship often includes overestimates of performance. Requiring performance and price commitments for production units, rather than meaningless and often misleading planning estimates, should reduce performance disappointments, budget disruptions, fund reallocations, program stretch-outs and possible program cancellations.

Further, under the "total package" plan, the winning contractor, having committed himself to cost and performance figures for production units before detailed design begins, will be

motivated from the outset of the development effort to design for economical production, for production reliability and for simplicity of maintenance, all of which are direct functions of initial design.

Of equal importance with competition is that the companies in this industry not be exposed to company-crippling losses and that, if efficient, they be permitted to earn the kind of profit needed to obtain the capital, personnel and facilities and to perform the independent research and development which are essential to making a continuing contribution to our national goals. In view of the risks inherent in total package procurement, a contractual framework carefully tailored to these risks is required. But the results will be well worth the effort. We will thereby reduce the waste and sterility that walk hand in hand with non-competitive contracts, and at the same time we will provide adequate rewards for jobs that are well done.

As many of you know, we are testing this concept on the C-5A. This program was selected because it did not represent such great advances in the current technology that the risks could not be reflected in the contractual ar-

the competitors are holding their teams together, again at great cost, and this serves a useful purpose only for the ultimate winner.

Are we asking, in connection with incentive fixed-price proposals, for too much detail with respect to cost, and its breakdown as between fiscal years, by function and by component? Are we asking for too much detailed design, rather than specifying requirements in terms of performance, and then permitting the winning competitor to achieve that performance in his own way?

There are undoubtedly many other problems which this new approach will bring to the surface, but based on what we know so far, it appears to be sound.

A question which may arise is how can an approach which is all right for relatively straightforward systems intended for extensive production be appropriate for space systems which involve so many unknowns and so little repetitive production? One answer is that as we proceed down the road in our space programs, we will find that here, too, we will get to the point where many of the things we want will not seriously stretch the then state of the art, or that the stretching can be limited to specific components and that the balance of a program can be subjected to the total package concept.

Technical creativity and flexibility should not be hampered by contractual arrangements which are arrived at competitively and which impose meaningful responsibility on the contractor. On the contrary, they should be stimulated thereby.

Price Competition Awards Increased Four Per Cent During FY 1965

Use of price competition by the Defense Department increased by more than four per cent during FY 1965 over FY 1964. This use accounted for a new high of 43.4 per cent of the dollar value of military prime contract awards during FY 1965, compared to 39.1 per cent for the previous fiscal year.

This increase was especially notable for Navy and Air Force, with the Army increasing by a smaller amount and the Defense Supply Agency showing a decrease. The comparative figures are given in the table below.

Percentage of Prime Contract Awards as a Result of Price Competition

	FY 1964	FY 1965
Army -----	51.8%	52.8%
Navy -----	36.7	41.7
Air Force -----	21.2	25.2
Defense Supply Agency -----	91.5	90.3
All Departments	39.1%	42.3%

rangements. Although there is no proof yet whether this concept will work, we have now been working with it long enough to be optimistic; and I expect it will be extended to other programs. For example, we intend to apply it to SRAM, and it is possible that it may be applied to the Mark XVII re-entry vehicle.

One of the problems in this approach is that in order to be able to bid intelligently on a system for which the building blocks are in hand but which has not yet been developed or tested as an integrated unit, much more work must be done during Contract Definition. This means more expense, and someone has to pay for it. The Air Force tries to pick up the tab on the ground that the maintenance of competition throughout the definition phase is worth more than its cost—and I for one am convinced that this is so. But the truth is that the companies in the competition, knowing how important it is to win, spend much more than what is provided for them.

A second problem is the length of time it takes to pick a winner after all the proposals are in. During this period

F-5A Freedom Fighter to be Evaluated in Vietnam



The Air Force will send 12 F-5A jet fighter aircraft to Vietnam this fall to evaluate the performance of this new multi-purpose plane under combat conditions.

This light-weight, supersonic aircraft, built by the Northrop Corporation, has been provided by the Defense Department to some allies under the Military Assistance Program. It can carry 6,200 pounds of bombs, rockets, air-to-air missiles, or other ordnance. It has two 20-millimeter cannons mounted in its nose and can take off fully loaded from unpaved runways in combat areas.

The F-5A's will be flown in Vietnam by pilots of the 4503rd Tactical Fighter Squadron and will be accompanied by an Air Force evaluation team which will obtain information to be used in developing tactical air concepts, procedures, tactics and techniques for the employment of these fighters in combat.

Munitions Export Control and Security Policy Administration

by

Joseph J. Liebling
Assistant for Security to the
Deputy Chief of Staff, Systems & Logistics, USAF
and the
Deputy Chief of Staff, Research & Development, USAF

It is interesting to recognize the perspective and reaction of individuals, whether they be in Government or industry, regarding what is meant by national or military security. To avoid philosophy, several years ago at a national regional meeting of one of our trade associations, the president of a major defense industry corporation, speaking about the challenge we faced in the international export market, made the following comment in closing out his talk:

"The United States Government must come to understand the character and degree of the competition facing us this minute, and to appreciate the full extent of America's interest in the outcome. It also is vital to us as an industry. Our foreign sales often mean the difference between a healthy industry and a sick one, and what could be of more critical concern to our national defense posture?

"We need to see our Government not only giving its positive support but removing immediately such unnatural handicaps as have hindered us even when the competition was straightforward. Heading this list, of course, are unreasonable and illogical security restrictions which serve no purpose but to deny us and our Government from winning some really worthwhile victories in the Cold War."

Perhaps a trifle critical and emotional remark but significant enough for notice.

At subsequent regional meetings of other national trade associations and carried through to the present date, during which time the world is experiencing several active rather than cold wars, the subjects of security policies, munitions exports and strategic material trade controls are being widely discussed as having a strong impact on the ability of American industry to compete more favorably in world trade. In fact, as late as September 2, 1965, a Congressman talking before the House of Representatives, proposed that Congress re-establish a House Select Committee on Export Control in view of the interrelationship between the Mutual Defense Assistance Act, Trading with the Enemy Act, Export Control Act, etc.

American industry has indicated its official position to the Government through its trade associations on these many occasions, seeking better clarification of national and military security policy considerations to facilitate the ability of industry to fulfill, in cooperation with the governments, the stated objectives of the current export program which became declared national policy by the Trade Export Expansion Act of 1962.

On February 20, 1965, the Department of Defense issued DOD Directive 5030.28, Subject: "Munitions Control Procedures for U. S. Munitions List Export License Applications Referred to the Department of Defense by the Department of State." It contains a specific statement of DOD policy consistent with overall national policy and the security interests of the U. S.—i.e., "to promote and encourage the export abroad of U. S. military material and services and related technical data to include advanced technological information to allied and friendly nations." The three Military Departments, Army, Navy and Air Force, were delegated authority for the implementation of this policy and for the munitions export license control program in cases referred for action by the Department of State.

The present export program calls for expansion of trade in the military products and related technology areas. National policy, therefore, dictates a more flexible

weighing of factors, taking into consideration security, military, political and defense industries' economic interests. It is a most significant responsibility and represents a revision of viewpoint on the part of the Government security review officials in terms of the U. S. balance of payment problem and military and national economic objectives. To fully support the program, the Military Departments are required to provide their coordinated departmental position on munitions cases to the Director of the Office of Munitions Control, Department of State, or to the Assistant Secretary of Defense (International Security Affairs), taking into consideration the following factors:

- Identification of material or data and end use.
- Security aspects, security policy interests and/or implications, including the current security classification, if any, of the item involved.
- Military advantage or detriment to the United States and impact on U. S. Government national policy for region, area, or country. Consistency with force goal objectives, military plans and operational requirements.
- Copyright, patent and/or proprietary rights involved and the United States interest therein.
- Impact on Military Assistance Program, sales, or requests and on coordinated weapons, co-development and co-production.
- Impact on DOD research and development, production, procurement and supply for United States Armed Forces, including whether use of United States Government-owned tooling or industrial facilities are involved.
- Significance of the specific item proposed for export in relation to the latest state of the art or advanced technology in that particular category of item. Relationship of proposed export to technological developments or programs in the country of destination.
- Legal considerations, i.e., compliance with Armed Services Procurement Regulation and International Traffic in Arms Regulation.

Technical mastery of applying national and military security factors within the Military Departments in the international export trade market has no black and white solution. U. S. prestige is enhanced greatly through



Mr. Joseph J. Liebling, Assistant for Security to both the Deputy Chief of Staff, Systems & Logistics, USAF, and the Deputy Chief of Staff, Research & Development, USAF, is the director for Air Force technical program security policy matters. In addition, he represents the Office of the Secretary of Defense as Chairman of the Working Group on Munitions Export Control and Security Policy of the Military Export Committee, Defense Industry Advisory Council.

the image of American superior technology and standardization of U. S. products must continue. Permit me to quote from an article by Arthur K. Watson titled, "Businessmen and Interdependence," in the 1963-1964 issue of the *Atlantic Community Quarterly*:

"There is a need for internationalizing products of American design. The time is past when the domestic market so far overshadows the foreign market that we can create products without regard to overseas buyers. If we are going to get the long production runs we need for foreign competition we must start at the drawing board and build world acceptance into the product."

One needs only to review the titles of articles which appeared about a month ago in a Washington, D. C., newspaper to anticipate the complexity of the judgments required to implement Government commitments of equipment, technology and materials involved in a company proposal:

- "International Lab on Moon is Pushed at Space Parley."
- "U. S. Trade Unit Going to Poland and Rumania."
- "Soviet Trade Reciprocity."

The impact of Government considerations and participation in such proposals would seem obvious since we are talking in terms of exchanging advanced technology, in the first instance for peaceful uses in international space programming and in the latter two for economic reasons to ease East-West tension. In order to avoid straying far afield from the responsibilities inherent in the Military Departments to implement the aforementioned DOD directive, primarily concerned with munitions exports, we have to confine our comments to what is required of us in the Defense Department in our relations with the Department of State, the agency charged with the issuance of the International Traffic in Arms Regulation, and to highlight certain requirements of industrial corporations to assist the Government in its judgment during the processing of a munitions case.

As we have all recognized, probably the most significant subject of interest is the requirement to develop detailed policies and guidance for both industry and Government agencies as to what equipment, data and advanced technology is releasable or non-releasable for national or military security reasons. Obviously, the most attractive potentiality for sales or commitments by U. S. corporations is the field of advanced technology and research and development products. It is also in this area that we are dealing with the most sensitive type of information to be considered for release, both classified and unclassified. We are dealing with judgment factors within the responsible Military Departments and the Department of Defense and these judgments have variations along similar lines from a national security viewpoint analogous to the extent we must go to establish a balanced equation on the one hand in increasing production of military arms for national defense efforts while, at the same time, exerting sincere and extensive effort on the other side to achieve disarmament in the interest of world peace. In other words, how far can we go in the research and development spectrum in terms of net advantage to the U. S., vis-a-vis the foreign government and its industry, weighing all the factors, political, military and economic?

In discharging the task assigned to the Working Group on Munitions Export Control and Security Policy by Mr. Henry Kuss, Chairman, Committee on Military Exports, Defense Industry Advisory Council, last April, we reviewed procedures in detail affecting the munitions export control program and security policy administration relating thereto. In addition, we are currently reviewing the impact of the implementation of the provision of the new International Traffic in Arms Regulation (included in Federal Register, Volume 30, Number 137, July 17, 1965, Part II) by industrial facilities and with Government agencies. The following are certain practices and procedures which our Working Group feels need current and future attention by appropriate industry and Government people if we are to effectively continue to enjoy the joint progress made so far in export trade expansion:

• We understand that, in certain cases, companies and the Government have been experiencing additional time delay in processing because the Department of State has not been receiving sufficient information for a industry to adequately identify which Military Department would have the prime interest in the data involved or which agency is the user since there is no contract for the product or technology involved. We find this difficult to understand since data or an item of equipment normally has some purpose of operation, i.e., shipboard use, use by land forces, or in aircraft and, in some instances, multipurpose uses, etc. The companies must identify the technology or equipment more readily for the Government as required by the International Traffic in Arms Regulation:

"Technology or equipment not under contract considered of advanced design, process, or technique should include a statement as to whether the equipment or technology involved was derived, produced or developed for any U. S. Government agency or military service for bidding or other purposes."

If this information is not sufficient, then a purpose or use of the equipment or technology should be submitted. The Department of State will then process the munitions case to the cognizant Military Department or user agency.

• Since the issuance of DOD Directive 5030.28, experience has indicated that some consideration be given to improving the administrative procedures for processing munitions cases between the Department of State and the Department of Defense agencies. We have suggested that an office be established within the Office of the Secretary of Defense which would serve as the final action agent or DOD control and reflect the consolidated position to the Department of State. A copy of all final State Department actions would be forwarded to the Assistant Secretary of Defense (International Security Affairs) and disseminated as necessary to the Office of the Director of Defense Research and Engineering and the Military Services. Such action and U. S. Government position of similar equipments and data.

• We recognize the need for clear policy guidance for industry and Government officials to assist in planning and decision making in those cases where contractors are proposing the release of technology pertaining to guidance, computers, gyros, propulsion systems, space satellite information, supersonic transport, etc. We are concerned with hardware and data under contract and that technology not under contract, but which has foreign exchange or export potential.

• Additional guidance will be provided in the implementation of the new International Traffic in Arms Regulation concerning (a) definition and application of technical data; (b) the public release of information and its relationship to export exemptions; (c) clarification of export control requirements for data and technology developed as a result of official visits, whether classified or unclassified, to industrial facilities by foreign nationals; and (d) simple interpretations with regard to exemptions permitted in cases which began as government-to-government negotiations and follow-up participation by companies.

• We feel there may be a need for some form of interdepartmental committee for better coordination among all Government agencies. In addition, a clear definition of authority and responsibility of each agency, where ultimately proposals by contractors involve potentially exportable equipment, data, or entering into licensing agreements, should be established. For example, the Federal Aviation Agency has prime interest in supersonic transport data releases, the National Aeronautics and Space Administration has prime responsibility for civilian space programs, the Department of Commerce for strategic materials, etc. Many cases must be submitted to two or more agencies for coordination and each is not using similar criteria for determination of releasability.

• Since the last meeting of the Working Group in April and the issuance of the DOD Industrial Security Manual

(Continued on Page 25)

Deep Ocean Engineering

by

William F. Burkart

Technical Director, U.S. Naval Civil Engineering Laboratory, Port Hueneme, California

Since the days of the cave man one of the principles of warfare has been "take the high ground." In the Navy there is an obverse corollary to this rule: "Go deeper."

During the last few years the Navy has been "going deeper" at an increasing rate. It is virtually certain that underwater structures of types never before constructed will be needed for military purposes, and probably also for commercial purposes as man learns more about how to gather the riches of the sea.

The ocean engineering chapter in the composite "Book of Engineering Knowledge" is now a small one. The Navy's Bureau of Yards and Docks (BuDocks), however, is in the process—literally—of expanding that chapter.

The Naval Civil Engineering Laboratory (NCEL) at Port Hueneme, Calif., is the spearhead of the Navy's drive to learn more about undersea structures. Although it is most difficult to predict the *form* and *function* of future structures, knowledge applicable to the building of all such ocean structures—including soil mechanics, materials behavior, means of communication and means of site evaluation—can be developed to permit design and use of appropriate structures when they are finally required.

The principal BuDocks areas of investigation are: foundation design, materials of construction and construction techniques.

Foundation Design.

In the work related to foundation design, it is necessary to learn how to use the ocean sediments as we do terrestrial soils. BuDocks is concerned with predicting their bearing values, their stability, their response to loading—rather than with such characteristics as their age or rate of deposition. Since these factors may influence the engineering properties of ocean soils, we are interested in them, but they do not constitute our main concern as we rely on oceanographers to investigate them.

The NCEL has performed soil analyses both for its own purposes and for the Navy Oceanographic Office. To date, several hundred samples have been analysed for their physical properties, as standardized in the soil mechanics field. NCEL is cataloging this information and examining it to determine whether or not a gross estimate of soil behavior can be made for a particular site on the basis of its

geographic location, topography and soil type.

A considerable effort is being assigned to the study of the properties of sediments. It is important that we learn more, for example, about shear strength of sediments. To study the shear strength of very soft sediments, NCEL built a sensitive, recording, vane-shear device. It measures the shear strength of ocean sediments whose failure stress is about 0.3 PSI, whereas terrestrial clays may fail at about 3.0 PSI.

Commercially available devices were not sufficiently sensitive for measurements of this type; therefore, NCEL had to design and build a shearing device.

NCEL is now developing a soil sampling device which will reduce the cost of sampling at sea, since samples can be obtained more rapidly, thus conserving ship time. The soil sampler has two components: an expendable section which remains on the sea floor and a retrievable section which is brought to the surface by a float.

The sampler is driven into the bottom by the weight when released by a tripping device. Simultaneously, the float is released. The corer is driven into the bottom where the outer tube and weight remain. The sample liner

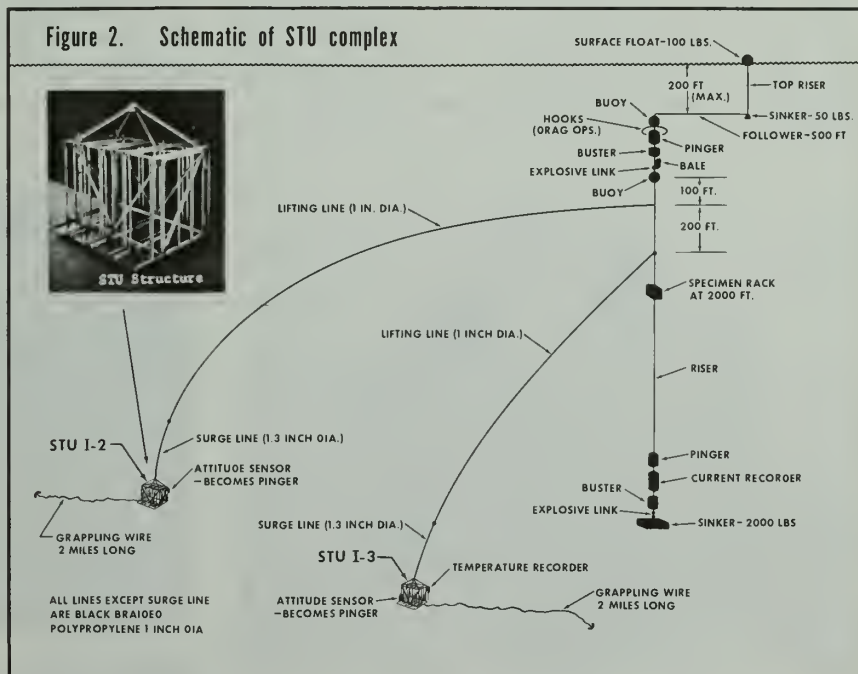
is withdrawn and taken to the surface by the float.

The entire apparatus is free-falling, unattached to the ship. Thus, a number can be released in a day's run. Since they will fall very nearly vertically, the sample location is fairly well determined. The sample has worked well in early shallow water tests. The cost of the expendable portion is estimated at \$20.

In addition to studies in the realm of soil mechanics, we have been studying concepts of anchorages and foundation designs. An anchorage in this case means a system for holding a structure in a desired position, either floating at the surface suspended from the ocean floor or resting on the ocean floor.

The first concept to be investigated is called a "padlock anchor." It is a device which will provide a fixed point on the ocean floor to which a structure can be attached. NCEL has built an experimental model which weighs 8,000 pounds. It is structurally overdesigned to allow for the uncertainties of development and will be lighter in a final design. The three supporting pads of this anchor, which rest on the bottom, are five feet square. Cylinders above the pads contain propellant-driven anchors. The anchors are attached by wire lines to drums driven by a battery-powered motor and contained in the central cylindrical support. By that means, the anchors can be pulled taut. The padlock anchor would be placed in position, the explosive anchors fixed and the anchors drawn taut.

The anchor assembly then would be ready to receive the structure or the structure may have been attached in advance.



Schematic of Submersible Test Unit (STU) Complex.

The capacity of the anchor depends upon the soil characteristics. In a competent soil the experimental model will support 80,000 pounds in bearing, or a pullout force of 40,000 pounds. An overturning moment of about 120,000 foot pounds can be resisted.

An attached structure could be level when the padlock anchor is on a slope as great as 15°.

Materials of Construction.

Undersea structures having service lives ranging from a few months to those of structures ashore, service lives of perhaps 20-25 years, must be constructed of carefully selected material. There is today very little information on long-time behavior of materials in the deep ocean environment. To obtain such information NCEL has a dual program. The first part of this program includes exposing materials in the deep ocean at off-shore sites at normal depths of 6,000 feet and 2,500 feet. The 6,000-foot depth, chosen because it represents a deep sea environment on the edge of a major basin, is significantly beyond the range in which construction operations have been conducted to date, and seemed within our reach at the time we planned our operations.

The 2,500-foot depth was chosen because it represents the level of minimum oxygen concentration in our area and, therefore, may yield a boundary value on deterioration results.

Specimens were attached to tower-like structures called submersible test units or STU's. The STU's also contain soil samples, pingers and other equipment.

The STU's in 6,000 feet of water are on the edge of the Pacific Basin about 35 miles southeast of San Miguel Island, westernmost of the islands off Santa Barbara, Calif., and about 85 miles from the harbor at Port Hueneme.

The STU's in 2,500 feet of water are about 15 miles north of the deeper site and 20 miles west of San Miguel Island.

To date six STU's have been installed. The first unit, placed at 6,000 feet in March 1962, was recovered in February 1965 after approximately three years of exposure. Three additional STU's were placed at the 6,000-foot depth. One was recovered after an exposure time of over four months and another after an exposure time of 13 months. The remaining STU will be recovered after a two-year exposure. Two STU's were placed in 2,340 feet of water and recovered after six and one-half months.

Specimens recovered after six and one-half months at 2,340 feet reveal several types of deterioration. Some maraging steel specimens failed at 75 per cent yield strength and others at 35 per cent yield strength.

Some specimens revealed the action of biological organisms on ropes, cable insulation, wood, etc.

Many agencies, both governmental and private, have expressed great interest in our materials program and have furnished specimens for exposure. We specify details as to the rack space available and return the specimens after exposure, following clearing and shipping directions of the sponsor. The Bureau of Naval Weapons has been of considerable assistance in this program by helping to defray the cost of these exposures at sea.

Based on visual inspection, only a few cases of deterioration different from those found in moving surface water have been noted.

The second part of the materials program includes exposing specimens in a simulated ocean environment in the laboratory. This we will do in pressure vessels in which chemical properties of the sea water and its temperature can be maintained at levels representative of the ocean environment. The facility consists of six 9 x 27-inch vessels made from 16-inch naval projectiles and one 18 x 36-inch vessel.

It is hoped that through the use of these facilities an adequate correlation can be obtained between the specimens in the simulated and the actual ocean environments so that most future materials testing can be done in the laboratory, a more economical type of experiment.

Construction Techniques

It appears to observers of the deep ocean engineering scene that there will be requirements to place very heavy structures or equipments on prepared foundations on the sea floor. The Navy, therefore, needs to learn about techniques and schemes for so doing.

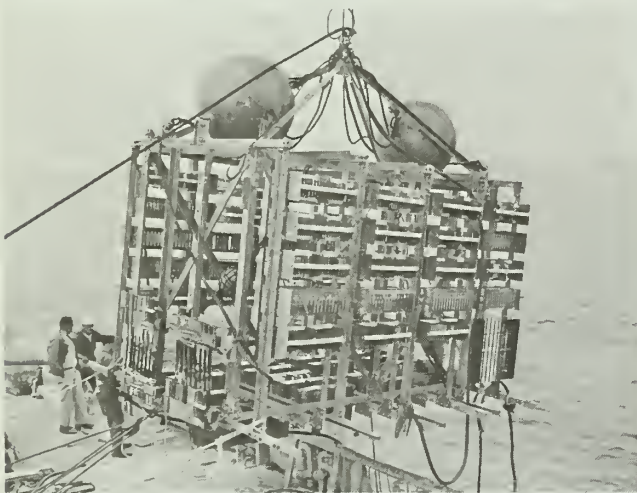
One obvious technique for easing the foundation problem is to reduce the load on the foundation by means of buoyancy devices. However, a disadvantage is immediately disclosed in that very large buoyant packages, difficult to handle, are required. Furthermore, if one must depend upon buoyancy, a risk is introduced since the buoyancy may be lost due to accident, deterioration, hostile action, or unforeseen natural events.

In any event it is necessary to understand the motions of work platforms excited by the sea, the motions of load suspended from very long elastic lines and the impact forces to be expected when lowering the load to a foundation. From such understanding might evolve improved winches, criteria for regulating construction time, load limiting devices, or devices to permit finely controlled positioning at the foundation depth.

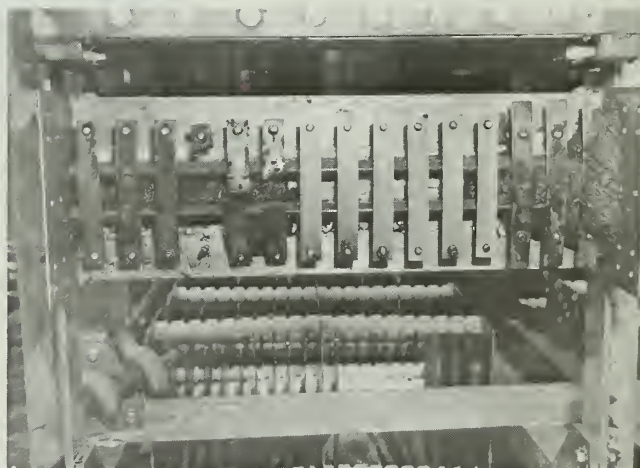
NCEL's approach to such problems has been both analytic and experimental. The motions of work platforms in the ocean have been analyzed using power-spectrum techniques. Model studies of work platforms have been conducted in wave basins.

A specific problem under study, concerning construction

(Continued on Page 25)



Typical Submersible Test Unit (STU) just after recovery.



Specimens exposed at depth of 2,340 feet for six and one-half months just above the ocean floor and under various degrees of bending stress.

DEPARTMENT OF DEFENSE

Lt. Gen. Harold W. Grant, USAF, (Ret.) has been appointed Director, Telecommunications Policy, in the Office of the Assistant Secretary of Defense (Installations and Logistics). He replaces Adm. Maurice E. Curtis, USN, (Ret.) who served in the position since 1960.

Brig. Gen. Arthur E. Exon, USAF, has been designated as Director of the Los Angeles Region, Defense Contract Administration Services, effective January 1966. Gen. Exon is now serving as Commander, Wright-Patterson AFB, Ohio.

Mr. Lawrence S. Finkelstein has been sworn in as Deputy Assistant Secretary of Defense (International Security Affairs) with responsibility for European and NATO affairs. Prior to the new job he served as Vice President of the Carnegie Endowment for International Peace.

Mr. Daniel Z. Henkin, Editor of Journal of Armed Forces, has been named Director of Operations in the Office of the Assistant Secretary of Defense (Public Affairs). Mr. Henkin will be the third ranking official in the overall Defense public affairs organization.

ARMY

Mr. Benjamin Goldberg has succeeded Dr. Robert S. Wiseman as Chief of the Warfare Vision Division of the Army Materiel Command Engineer Research and Development Laboratories, Fort Belvoir, Va. Dr. Wiseman was transferred to the Army Electronics Command, Fort Monmouth, N. J., where he serves as Director of the Combat Surveillance-Target Acquisition Laboratory.

Maj. Gen. William H. Craig, Commanding General, USA Security Agency, will succeed Maj. Gen. Frederick R. Zierath as Director, Military Assistance Div., USEUCOM. Gen. Craig's successor is Brig. Gen. Charles J. Denholm.

Brig. Gen. John M. Finn, former Chief of Staff, I Corps, Korea, has succeeded Maj. Gen. Clarence C. Haug, as Chief, Mutual Security Office, U.S. Army Materiel Command.

Brig. Gen. William B. Latta has succeeded retiring Maj. Gen. Frank W. Moorman as Commanding General, U.S. Army Electronics Command, Fort Monmouth N.J.

Brig. Gen. Raymond C. Conroy has been relieved of his duties as Deputy Commanding General, Army Materiel Command, Western Operations, to enable him to devote full time to his responsibilities as Commander, Western Area, Military Traffic Management and Terminal Service. Col.



ABOUT PEOPLE

Dwight W. Langham has been designated Acting Deputy Commanding General, Army Materiel Command, Western Operations.

Col. Kenneth M. Gonseth has been appointed UNICOM/STARCOM project manager for the Army Materiel Command. He succeeds Col. H. F. Foster, now assigned to Korea.

Col. Karl F. Eklund is the new Deputy Commander at White Sands Missile Range, N.M. He relieves Col. John C. Bane who has retired.

Col. William J. Durrenberger, assumed command of the U.S. Army Tank Automotive Center, Warren, Mich., Sept. 20. Col. Arthur H. Sweeney, Jr., has been reassigned to fill Col. Durrenberger's previous job as Commanding Officer, Springfield Armory, Mass.

Lt. Col. Spencer R. Baen has been assigned as Shillelagh Project Manager, succeeding Lt. Col. Robert M. Pearce.

NAVY

Capt. Walter M. Enger (RAdm. selectee) is the new Deputy Chief of the Bureau of Yards and Docks.

RAdm. Raymond N. Sharp has relieved RAdm. John E. Clark as Commander, Pacific Missile Range, Point Mugu, Calif. Adm. Clark has been reassigned as Commandant, Twelfth Naval District, headquartered in San Francisco.

RAdm. Harold G. Bowen has been named new Deputy Chief of Naval Operations for Development.

RAdm. Ben W. Sarver has replaced RAdm. Eli T. Reich as Project Manager of Surface Missile Systems, Office of Naval Material.

The following U.S. Marine Corps officers have been promoted to the rank of major general: Brig. Gen. Norman J. Anderson, Commander Marine Corps Air Bases, East/Commanding General, USMC Air Station, Cherry Point, N.C.; Brig. Gen. Joseph O. Butcher, Commanding General, USMC Supply Activity, Philadelphia; and Brig. Gen. Wood B. Kyle, Deputy Chief of Staff (RD&S) Hq., USMC.

Capt. Leslie R. Olsen has assumed command of the U.S. Naval Propellant Plant, Indian Head, Md. He relieves Capt. Oscar F. Dreyer.

Capt. Ernest W. Dobie, Jr., has been assigned as Director Anti-Submarine Warfare R&D Programs, under the Deputy Chief of Naval Operations for Development. Capt. Dobie is slated for promotion to rear admiral.

Capt. Clarence J. Zurcher has assumed the duties of Assistant Deputy Chief of Naval Material for Programs & Financial Management, replacing Capt. Carl R. Dwyer.

AIR FORCE

Maj. Gen. Richard P. Klocko has been reassigned as Commander, Air Force Communications Service, Scott AFB, Ill., from duty as Commander, USAF Security Service.

Dr. Harrell V. Noble has been named to head the Air Force Avionics Laboratory's Electronics Technology Div., Wright-Patterson AFB, Ohio, succeeding Lt. Col. Louis O. Carroll who has retired.

Maj. Gen. Don R. Ostrander, Commander, Office of Aerospace Research, has retired. His successor is Brig. Gen. Ernest A. Pinson, formerly Dep. Commander.

Other general officer assignments announced by the Air Force are: Brig. Gen. Joseph S. Bleymaier, Commander, Air Force Western Test Range, Vandenberg AFB, Calif.; Brig. Gen. Leo A. Kiley, Commander, Air Force Missile Development Center, Holloman AFB, N. M.; Brig. Gen. Hugh B. Manson, Commander, Systems Engineering Group, AFSC, Wright-Patterson AFB, Ohio; Brig. Gen. Daniel R. Riley, Commander, Air Force Contract Management Div., AFSC, Los Angeles, Calif.; Brig. Gen. John E. Frizen, Dir., Communications & Electronics, Air Defense Command, Ent AFB, Colo.; and Brig. Gen. Jewell C. Maxwell, Dir. of Supersonic Transport Program, Federal Aviation Agency.

New assignments within the Air Force Systems Command are: Col. Robert F. Long, Commander, Air Force Cambridge Research Laboratory; Col. James L. Dick, Vice Commander, Air Force Cambridge Research Laboratory; Col. Albert R. Shiely, Vice Commander, Electronic Systems Div.; Col. Kenneth B. Fess, Dir. of Systems Plans, Electronics Systems Div.; Col. James B. Hilton, Chief of Plans & Operations, Electronic Systems Div., and Col. Donald G. Nunn, Comptroller, Electronic Systems Div.



MEETINGS AND SYMPOSIA

NOVEMBER 1965

V/STOL Symposium, Nov. 3-4, at Wright-Patterson AFB, Ohio. Sponsor: American Helicopter Society. Hosts: AFSC Aeronautics System Div., Research and Technology Div. and Systems Engineering Group. Contact: George Dausman, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext. 25104 or 23164.

Fourth Hypervelocity Techniques Symposium, Nov. 15-16, at Arnold Air Force Station, Tenn. Sponsors: Arnold Engineering Development Center, ARO, Inc., and Denver Research Institute. Contact: J. Lukasiewicz, Arnold Air Force Station, Tenn., telephone (Area Code 615) 455-2611, ext. 7204 or 7205.

Fourth Annual Symposium on Physics of Failure in Electronics, Nov. 16-18, at Illinois Institute of Technology Research Institute. Co-sponsors: Rome Air Development Center and the Illinois Institute of Technology Research Institute. Contact: Joseph Schramm (EMERP), Rome Air Development Center, Griffiss AFB, N.Y., telephone (Area Code 315) FF6-3200, ext. 2813.

DECEMBER 1965

Fourteenth Annual Wire and Cable Symposium, Dec. 1-3, at the Shelburne Hotel, Atlantic City, N.J. Sponsor: Army Electronics Command. Contact: Milton Tenzer, Symposium Chairman, Electronics Parts and Materials Div., Army Electronics Laboratory, Fort Monmouth, N.J., telephone (Area Code 201) 535-1834.

International Symposium on Differential Equations and Theory of Systems, Dec. 27-30, at the University of Puerto Rico. Sponsors: Air Force Office of Scientific Research, Brown University and the University of Puerto Rico. Contact: Maj. B. R. Agins (SRMA), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-1302.

JANUARY 1966

Unguided Rocket Ballistics, Jan. 11-13, at Texas Western College, El Paso, Tex. Sponsor: Army Electronics Research and Development Agency. Con-

tact: Vertis C. Cochran, Army Electronics Research and Development Agency, White Sands Missile Range, N.M.

Research Effectiveness as Related to Vehicles, Jan. 28-29, at Detroit, Mich. Sponsor: U.S. Army. Contact: Paul D. Denn, Chief, Research Div., Army Mobility Command, Warren, Mich., telephone (Area Code 313) 756-1000.

International Symposium on Information Theory, Jan. 31-Feb. 2, at the University of California at Los Angeles, Calif. Co-sponsors: Air Force Office of Scientific Research and Information Theory Group of the Institute of Electrical and Electronics Engineers. Contact: Prof. J. Carlyle, UCLA, Los Angeles, Calif., telephone (Area Code 213) 478-9711, ext. 7181.

FEBRUARY 1966

Eighth Joint Industry-Military-Government Packaging and Materials Handling Symposium, Sheraton Park Hotel, Washington, D.C., Feb. 28-March 2. Sponsors: National Security Industrial Assn., Office of Secretary of Defense, Military Services, Department of Commerce, NASA, GSA and AEC. Contact: W. J. Monaghan, NSIA, Suite 800, 1030 15th St., N.W., Washington, D.C.

MARCH 1966

Conference on Functional Analysis, March 28-April 1, at the University of California, Irvine, Calif. Co-sponsors: Air Force Office of Scientific Research and the University of California. Contact: R. G. Pohrer (SRMM), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-5248.

Second International Symposium on Aerobiology, March 29-30, at Chicago. Sponsors: U.S. Army and Illinois Institute of Technology Research Institute. Contact: Elwood K. Wolfe, Director of Technical Services, Fort Detrick, Frederick, Md., telephone (Area Code 301) 663-4111, ext. 2214.

Bionics Symposium 1966, dates undetermined, at Sheraton Hotel, Dayton, Ohio. Sponsors: Aerospace Medical Research Laboratory, Aerospace Medical Div. and Avionics Laboratory, Research and Technology Div. Con-

tact: Dr. H. L. Oeistreich (MRBAM), Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253-7111, ext. 3-6108.

APRIL 1966

Second Symposium on Marine Bio-Acoustics, April 6-8, at American Museum of Natural History, Central Park West at 79th St., New York City and Naval Training Device Center, Port Washington, N.Y. Sponsor: Naval Training Device Center. Contact: F. E. Wolfe, Jr., Research Program Manager, Naval Training Device Center, Port Washington, N.Y., telephone (Area Code 516), PO 7-9100, ext. 550.

Symposium on Generalized Networks, 14th in a series of international symposia organized by the Polytechnic Institute of Brooklyn, Microwave Research Institute, April 12-14, at New York City. Sponsors: Air Force Office of Scientific Research, Office of Naval Research and the Army Research Office, Society for Industrial and Applied Mathematics and the Institute for Electrical and Electronics Engineers. Contact: Lt. Col. E. P. Gaines, Jr., (SREE), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C., telephone (Area Code 202) OXford 6-3671.

Twentieth Annual Frequency Control Symposium, April 18-20, at the Shelburne Hotel, Atlantic City, N.J. Sponsor: Army Electronics Laboratories. Contact: M. F. Timm, Solid State & Frequency Control Div., Army Electronics Laboratories, Fort Monmouth, N.J., telephone (Area Code 201) 535-1728.

SPRING 1966

Second International Symposium on Air-Borne Infection, dates undetermined, at Baltimore, Md. Sponsors: Department of the Army and The Johns-Hopkins School of Medicine. Contact: Elwood K. Wolfe, Director of Technical Services, Fort Detrick, Frederick, Md., telephone (Area Code 301) 663-4111, ext. 2214. (Rescheduled from October 20-21, 1965.)

Management Improvements Within the Naval Material Support Establishment

by

Rear Admiral R. L. Shifley, USN
Vice Chief of Naval Material

There are three especially prominent areas where major efforts are being made to effect management improvements in the Naval Material Support Establishment (NMSE)—the organization which provides the material which keeps the fleet at sea and ready.

The first of these is improved planning. Never before in the history of the U.S. Navy have so many proposed actions been so thoroughly examined and re-examined, by so many, with such favorable results. Examples of the "study syndrome" within the Naval Material Support Establishment are easy to find.

Advance Procurement Planning (APP), for example, is a field which is really opening wide now. Advance Procurement Planning puts the procurement expert alongside the design engineer.

With APP, new systems will be "procurement ready" when they are approved by the fleet.

The APP for the SPS-48 radar, for example, showed that the Navy would save \$600,000 if the purchase was made on a multi-year contract. This finding was reached while the radar was still in the developmental stage, not some time after it had been released for production.

Project Definition, or Contract Definition, as it is now called, is another aspect of this DOD-wide insistence on deciding what you are doing before you do it.

Third is the increasing attention the Navy is giving to Technical Development Plans. TDP's spell out exactly how the effort to respond to a Specific Operation Requirement will be carried out. Studying the problem and setting forth its solution in detail and in advance saves time and money.

Another example of the "study syndrome" is the Navy's adoption of the "Project Master Plan," a basic, overall long range plan of progress required for each newly chartered project.

A second drive toward better management is taking place in the field of contracting. Competition, multi-year purchasing and two-step formal advertising are three indicators of better management in contracting.

The Cost Plus Fixed Fee contract is almost a thing of the past. Whereas five years ago 31 per cent of the Navy's procurement money was paid under Cost Plus Fixed Fee contracts, the figure for 1965 was down to 9.4 per cent. This illustrates the Navy's effort to achieve better returns on expenditures—through competition.

Multi-year purchasing is another contracting trend which promises both better management and increased economy. Under this procedure, the Navy contracts for programmed requirements in the current year and up to four years beyond the current year. The contractor is able to procure materials and plan production on the basis of large quantities and long production runs, with better returns to the Government.

Two-step formal advertising is being emphasized as a means of obtaining competition on items that would otherwise be restricted to sole source procurement. Under this procedure the first step determines whether a "meeting of the minds" has taken place as to the technical characteristics of the item. The second step determines price.

Two-step formal advertising has advantages both for the buyer and the seller and will be used more and more frequently as time passes.

More thorough study of intended actions and better contracting procedures are two of the more prominent drives for better management within the Naval Material Support Establishment today. But standing head and shoulders above all other moves to increase management effectiveness within the Naval Material Support Establish-

ment is one which is now moving forward ambitiously: Project Management.

When the Naval Material Support Establishment was formed at the end of 1963, the Navy had only two designated projects. One, the Surface Missile System, was in its formative stages, and the other, the Special Projects Office, was successfully accomplishing its mission of producing the Polaris force.

Today, 20 months later, 22 projects have been chartered:

Nine of the project managers report to the Chief of Naval Material. They are managers of the:

- Fleet Ballistic Missile Project
- Surface Missile Systems Project
- Anti-Submarine Warfare Systems Project
- F-111B Weapon System Project
- Instrumentation Ships Project
- All-Weather Carrier Landing Systems Project
- Reconnaissance, Electronic Warfare, Special Operations and Naval Intelligence Processing Systems
- Air Traffic Control Radar Beacon System and IFF Mark XII System
- OMEGA Navigation System

The first three were chartered by the Secretary of the Navy and the remaining six by the Chief of Naval Material. All nine, however, report to the Chief of Naval Material.

Of the remaining projects, two are within the Bureau of Ships. They are: SUBAJAD, a classified project and SATCOM, the Satellite Communications Project.

The Bureau of Naval Weapons has designated 11 projects. They are:

- E-2A Early Warning Aircraft
- F-4 Phantom II Fighter
- A-6 Intruder attack aircraft
- A-5 Vigilante attack aircraft
- A-7 Corsair II attack aircraft
- OV-10 (COIN) Counterinsurgency aircraft
- DASH Drone anti-submarine helicopter
- Shrike Weapon System Project
- Integrated Light Attack Avionics System
- Integrated Helicopter Avionics System
- Versatile Avionics Support and Test



As Vice Chief of Naval Material, RAdm. R. L. Shifley is directly responsible for programming and financial management in the Naval Material Support Establishment. He is also responsible for the efficient utilization of project management within the Navy. He is a former carrier division commander and wartime commander of an air group during numerous air-sea battles over the western Pacific.

One of the factors which shapes the Navy's Project Management philosophy is the importance of a deliberate approach. A deliberate approach in setting up new projects is necessary because the projects must be kept in balance with the bureau functional organizations.

In project management, the organizational pattern resembles a matrix. As shown on Chart A, the Bureaus can be thought of as the vertical elements of the matrix, and the Project Managers as the horizontal elements. Together the Bureaus and the Project Managers share the parcels of resources and know-how which are the substance from which the Navy creates and deploys new weapons systems.

The Project Manager has positive control of his own resources—the money. The Bureaus have the technical expertise—the engineering know-how.

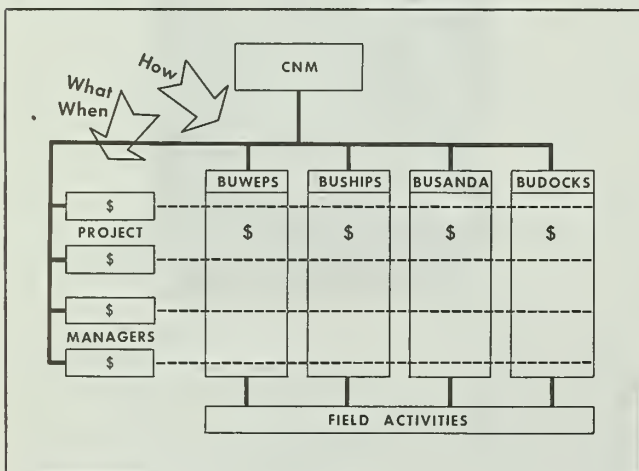
The Project Managers head streamlined management teams. They are in the business of deciding *what* should be done and *when* it should be done. The Bureaus decide *how* the thing is to be done. The project offices are relatively lightly staffed. They control the overall project. They make the plans and they worry about the interfaces. But the *how* part is a responsibility assigned to the Bureaus.

The Navy's long term investment in competence and capability resides within the functional entities—the Bureaus. Every time a new project is set up it has to be staffed from existing resources, the pools of talent which are presently assigned to the Bureaus.

This explains why the Navy has to move at a deliberate, carefully considered speed in establishing new projects. It has to make sure that too much talent isn't drained away too rapidly from the functional organization. The bureaus need time to adjust, as new projects come into being. The adoption of project management in the Navy is for this reason a gradual process.

It is recognized that project management is not the panacea for all the Navy's hardware problems. But it is a healthy example of what the Navy is doing to improve its management today. The climate is right and the Naval Material Support Establishment is ideally structured to utilize the Project Management technique.

In summary, three drives toward improved management are highly visible within the NMSE today. These are more thorough planning, new and more astute contracting and, most dynamic of all, the move toward Project Management.



INDUSTRY BRIEFS

Lockheed Aircraft Corporation's president, Daniel J. Haughton, was the winner of the National Defense Transportation Association's 16th Annual National Transportation Award. Selection for the award, which is given each year to a person or organization contributing most to defense transportation, was made by the Joint Chiefs of Staff . . . American Telephone and Telegraph Company is the first recipient of the new Air Force Citation honoring civilian employers for supporting and encouraging the participation of Air National Guardsmen and Air Force Reservists in the Air Reserve program. AT&T President, H. I. Romnes, accepted the citation from Air Force Chief of Staff General J. P. McConnell.

In preparation for missions geared toward improving man's knowledge of the stars, Grumman Aircraft Engineering Corporation announced that Prototype Qualification Tests on the Orbiting Astronomical Observatory for NASA have been successfully completed. . . . LTV Aerospace Corporation reports that it has delivered the production model of the Astronaut Maneuvering Unit to the Air Force.

Carroll C. Smith, Vitro Laboratories engineer, has been awarded a patent by the U. S. Patent Office for equipment and techniques for ballasting torpedoes, self-propelled mines, missiles or other cylindrical bodies so that they remain in the proper attitude when running . . . A cost reduction of \$135,000 on the Transtage Program has resulted in an Air Force citation to Aerojet General Corporation.

Raytheon Company arranged for representatives of the Peace Corps to have in-plant interviews with their employees interested in possible service with the Corps . . . Ryan Aeronautical Company reports that more than 215 flights have been made in the General Electric Company-Ryan XV-5A flight test program since it was launched last year.

The first Burroughs Corporation Backup Interceptor Control facility has been turned over to the Air Defense Command. . . . The Sylvania Electronic System's 1965 Sylvania-Minuteman Award for the most outstanding U. S. Army ROTC cadet was won by Northeastern University student David Potter. The presentation was made by Major General Charles S. O'Malley, Jr., Commanding General, III U. S. Army Corps and Fort Devens, Mass.

A multi-font print reader with a reading rate of 500 characters per second—about 25 times faster than the conventional manual speed—has been developed by the Rome Air Development Center in conjunction with the Philco Corporation . . . Cessna Aircraft Company's T-14A became operational in the Air Training Command with the Undergraduate Pilot Training class . . . The increasing importance of data management as the key element in decision making was stressed recently by Karl G. Harr, Jr., President of the Aerospace Industries Association at the Data Management Symposium co-sponsored by the U. S. Air Force and AIA. The challenge is that the "right people get the right data at the right time."

Security Films Available For Industry Training Programs

Defense contractors who are conducting security education programs at their facilities can obtain security training films from the Department of Defense to supplement presentations, lectures and conferences.

Requests for security training films should be submitted to the Director, U.S. Audio-Visual Communications Center, at the following addresses:

First U.S. Army, Governors Island, N. Y.
Second U.S. Army, Fort George G. Meade, Md.
Third U.S. Army, Fort McPherson, Ga.
Fourth U.S. Army, Fort Sam Houston, Tex.
Fifth U.S. Army, Fort Sheridan, Ill.
Sixth U.S. Army, Presidio of San Francisco, Calif.
Military District of Washington, Fort Meyer, Va.

Security films available:

The Hollow Coin (DODIS-3)—30 minutes, black and white. A documentary concerning the events leading up to, during and following the trial of Soviet espionage agent Rudolf Abel, convicted of espionage activity against the United States.

The Daily Enemy (DODIS-4)—20 minutes, color. Depicts carelessness, complacency and ignorance as enemies of good security. Shows incidents of the more common security violations to motivate viewers toward good security practices.

The Security Man (DODIS-5)—30 minutes, black and white. Treats six problem areas confronting industrial security personnel. Security violations are exposed and corrective actions are shown.

The Secret Underworld (DODIS-6)—25 minutes, black and white. A documentary, based on the case of convicted spy Gordon Lonsdale of the United Kingdom, demonstrating the reality of the espionage hazard.

The Enemy Agent and You (DODIS-7)—25 minutes, black and white. Reveals techniques and devices used by enemy agents to obtain information. Emphasis is placed on security consciousness and disciplined moral behavior, particularly when traveling in a foreign country.

Small Business Prime Contract Awards Make Gain in FY 1965

Secretary of Defense Robert S. McNamara has reported to President Johnson that small business firms received \$5,305 million in defense prime contract awards during FY 1965. This is \$463 million more than the total for the previous fiscal year and the highest dollar volume since the Korean War.

Small business firms received 20.3 per cent of all Defense prime contract awards to U.S. business firms during FY 1965 compared to 18.0 per cent for FY 1964. It was the highest small business percentage since FY 1957.

These results are closely related to the active programs to assist small business initiated by the Department of Defense and carried out by Small Business and Procurement Specialists in all Defense procurement installations.

Procurement of commercial type items, military construction and small purchases increased by \$394 million, and civil functions (rivers and harbors work of the Army Corps of Engineers) increased by \$133 million. The small business share of these contracts were 44 and 49 per cent, respectively.

The small business "set-aside" program has been a favorable factor in the total dollars awarded to small business firms. This preference program has steadily increased during the seven-year period starting in 1959 when \$643 million were awarded through set-asides to \$1,642 million in FY 1965.

Another significant DOD program, which has been helpful to the scientific and industrial community in small business source development, is the small business and labor surplus area procurement clinics which have been held in a number of sections of the country. At these clinics (in which Defense is joined by the Department of Commerce and the Small Business Administration) the Federal contract process is explained by procurement specialists and current bid packages are available for consideration and subsequent bid action by potential contractors.

PERT Orientation Courses Offered to Industry

A series of courses designed to encourage uniformity in the application of advanced management techniques will be given at the Defense Department's Program Evaluation and Review Technique (PERT) Training Center in Washington, D.C. during FY 66.

Representatives from industrial concerns engaged in Government-sponsored programs, as well as the Department of Defense and other Government agencies, are invited to attend.

Information about the course or registration procedures may be obtained from the PERT Orientation and Training Center, Vanguard Building, 1111 20th St., N.W., Washington, D.C. 20333, telephone (Area Code 202) Oxford 6-7185, 6-7187 or 6-7197.

Courses offered include a three-hour Orientation Session for Top Executives, an eight-hour Middle Management Orientation Course and a Management Training Workshop of 40 hours.

Purpose of the Top Executives Course is to familiarize administrators of Government and industrial organizations with the concepts and uses of PERT as a systematic approach to the decision-making process. Emphasis will be placed on the principles of PERT and their managerial implications rather than on the mechanics of the techniques. Courses will convene on Nov. 4, Dec. 9, Jan. 14, Feb. 11, March 3, March 31, April 15, May 12 and June 2.

The Middle Management 8-hour course is designed to acquaint Government managers, corporate and program representatives of industrial organizations with the concepts and uses of PERT and related techniques. The course is primarily intended for those middle management personnel who cannot attend the 40-hour PERT

course. Lectures and discussions will be included in the day-long session which is scheduled for Nov. 2, Nov. 23, Dec. 7, Jan. 11, Jan. 25, Feb. 8, March 1, March 29, April 12, April 26, May 10, May 24, June 14 and June 28.

The Workshop is divided into two sections and provides attendants with a systematic approach to the decision-making process. Lectures and films are alternated with workshop sessions using simulation exercises and case problems to illustrate the application of the principles of PERT.

Principles of PERT networking techniques, calculations, scheduling and network updating will be covered in the first section.

The second session covers principles and operating methods of the PERT Cost system. A continuous case problem runs through all five days, which not only ties the two sections together but gives an indication of the advantages to be gained from integrating cost and schedule control on a project.

A 4-5 hour session in CAPERTISM (Computer Assisted PERT Simulation) will be offered on the evening of the third day of the course. The CAPERTISM exercise introduces the student to computerized means of simulating cost and time effects of alternatives for attaining program or projected goals.

A charge of \$58 will be required from all non-Defense Department participants in the one-week course. Non-DOD Government agencies, industrial contractors, and authorized foreign nations will be billed by the Secretary of the Air Staff, Budget and Accounting Branch, Headquarters, USAF, on the basis of actual participation.

CALENDAR OF EVENTS

- Oct. 26: American Society of Safety Engineers Meeting, Chicago, Ill.
- Nov. 1-2: Society of American Value Engineering, West Coast Colloquim, San Diego, Calif.
- Nov. 1-3: International Aviation Research and Development Symposium, Atlantic City, N. J.
- Nov. 3-4: Aerospace Industries Assn. of America, Product Support Committee National Meeting, Washington, D. C.
- Nov. 3-5: Northeast Electronics Research and Engineering Meeting, Boston, Mass.
- Nov. 8-12: Society of Automotive Engineers Meeting, New York City.
- Nov. 15-17: International Congress on Air Technology, Hot Springs, Ark.
- Nov. 16-19: Interagency Chemical Rocket Propulsion Group Meeting China Lake, Calif.
- Dec. 1-3: National Assn of Mfg. Meeting, New York City.
- Dec. 4: Aviation Demonstration, Fort Sill, Okla.
- Dec. 5-9: American Institute of Chemical Engineers Meeting Philadelphia, Pa.
- Dec. 6-8: Chemical Specialties Mfg. Assn. Meeting, Washington, D. C.
- Dec. 13-15: American Institute of Aeronautics & Astronautics Specialist Meeting, New York City.
- Dec. 17: 62nd Anniversary of Powered Flight.
- Dec. 26-31: American Assn. for Advancement of Science Meeting, Berkeley, Calif.
- Jan. 11-12: Man's Extension Into the Sea, Tentative Industrial Information Program, Washington, D.C.
- Jan. 13: 18th Pacific Coast Regional NSIA Dinner, Los Angeles, Calif.
- Feb. 28-March 2: 8th Joint NSIA Industry—Military—Government Packaging & Materials Handling Symposium, location undetermined. Sheraton Park Hotel, Washington, D.C.

Liaison Room at AUSA Convention in Main Exhibition Hall

The Army - Industry Liaison Room at the Association of the U. S. Army Convention, Washington, D. C., October 25-27, which in previous years was located in the Franklin Room, will be located in the Main Exhibition Hall of the Sheraton-Park Hotel this year as a greater convenience to industry attendees.

In addition, the Army's two new industry information programs—the Qualitative Development Requirements Information Program (QDRI) and the Advanced Planning Procurement Information Program (APPI)—will highlight the activities of the Army-Industry Liaison Room.

Representatives will be present from the U. S. Army Materiel Command and its subordinate commands, the Department of the Army Office of the Chief of Research & Development, the Office of the Assistant Secretary of Defense (Installations & Logistics), and the Office of the Assistant Secretary of Defense (Public Affairs), the Defense Supply Agency and the Defense Documentation Center. Personnel manning the Liaison Room will be able to discuss any matters concerning research and development and end-item procurement.

Tinker AFB—Oklahoma City Cooperation of Mutual Benefit

Civic leaders throughout the country are taking an interested look at the cooperative base-community relationship which has existed between Tinker Air Force Base and its host community of Oklahoma City for the past 23 years.

Representatives from as far away as San Bernardino and Sacramento, Calif., and Warner-Robins, Ga., have met with base and Chamber of Commerce officials in the central Oklahoma metropolis to get ideas for promoting base-community relations in their areas. Officials from San Antonio, Tex., have also indicated interest in a similar visit.

Oklahoma City Chamber of Commerce has rallied city government, planning commissions, state highway department and other agencies to in-

sure that conditions beyond the control of Tinker AFB officials meet base requirements.

Fifty-four per cent of Tinker AFB's 3,800 acres have been donated by the community. An additional 12,000 acre "buffer zone" was acquired by the Chamber to insure protection and flexibility for the base.

As a result of the Chamber's work, the huge logistics base is now served by an interstate highway on the north. A by-pass for the interstate highway is scheduled for construction along Tinker AFB's south boundary.

The Air Force Logistics Command's Oklahoma City Air Material Area, headquartered at Tinker AFB, employs most of the 19,000 civilians employed at the base.

NOTICE

In the circularization of the *Defense Industry Bulletin* which has just been completed, many survey cards were returned indicating a desire to be retained on our distribution but with the portion of the card containing the name and address of the subscriber removed.

As a result many subscribers who wish to be retained on the mailing list will be removed since we have no means of identifying them. Therefore, if you fail to receive your December issue, please advise us and we will be pleased to reinstate your name on the Bulletin mailing list.

The Editor.



FROM THE SPEAKERS ROSTRUM



Dr. Thomas P. Cheatham, Jr.

Excerpt from address by Dr. Thomas P. Cheatham, Jr., Deputy Director of Defense Research & Engineering (Tactical Warfare Programs), before the Armed Forces Communication and Electronics Association, Fort Monmouth, N. J.

The Military-Industrial Interface

* * * * *

In keeping with our systems oriented approach for solving technical problems, I would like to discuss with you some of the various aspects of the technical, management and organizational interfaces that occur between elements of the DOD and members of the industrial community. This interface occurs principally in the execution phase of the RDT&E cycle. Since it is the pay-off phase, it is not unreasonable to find it receiving special attention. . . .

Rather than dwell upon the more familiar aspect of the Government/industrial interface in contractual areas, I am going to discuss some of the lesser known areas which I think have an important bearing upon this interface. The first of these areas is the Five Year Force Structure and Financial Plan. This is the basic Department of Defense planning vehicle. All of the various projects and tasks and sub-tasks in the RDT&E efforts go together to form supporting program elements that make up this force structure and financial plan. It is the quality of this plan that determines the Congressional response. From the Congress we obtain one of our two most important resources and that is money. The other resource, time, is not truly under our control. Political, fiscal and military matters are determining elements or constraints of the time resource that is available for accomplishing the R&D effort. While the resources are not completely under our control, the five year planning of their expenditure is very much under our control and is one of the things that must be done well. . . .

To accomplish this goal it is going to be necessary to plan and formulate programs that are achievable. It will take some very sharp pencils and pretty shrewd figuring to plan these programs. It will take some guts to be realistic about the relative importance of reliability, maintainability and availability as opposed to a continuous exercise of improvement in laboratory performance. Let me assure you, though, that this type of hard nosed planning is far easier than it will be in the future to justify the deficiencies in planning that resulted in programs being stopped due to shortages of money or time that

led to a lack of performance for the field soldier. The competition among the various programs and our worldwide service needs are just too keen to tolerate poor and unrealistic planning.

Now once this planning has been done and done well, it will provide industry some logical guidelines for directing their own in-house research efforts. This five year plan follows the evolutionary R&D cycle in that it starts out with research and takes the ideas from research and puts them into exploratory development to see what possible applications they have. Growing out of this work we have the advanced development, engineering development and operational system development phases which ultimately result in hardware delivered to the services. One of the most frequent technical activities that complicate the RDT&E cycle is when we engage in activities that involve concurrency between any of the phases of this evolutionary cycle. Both the military and industrial sides of the house will have to work together to insure that this cycle is followed. Through close cooperation and information exchange with industry, I think it is possible to follow this cycle much better than we have in the past. We can lubricate this interface as it relates to the evolutionary cycle by promoting activities that involve a mutual exchange of candid and frank information between Government and industry. AFCEA, as an organization, is one means of accomplishing this interchange of information. The advanced briefings to industry program is another means of promoting this exchange.

I would also like to point out that the Department of Defense standards of conduct were not designed to make members of the Government avoid association with industry. These standards of conduct were provided as a series of guidelines to establish a higher degree of objectiveness in the relations between Government and industry. They were also designed to curb excesses on both sides that have grown up in recent years. . . .

Next let me be just a little bit more specific for awhile and cover some interface areas that I think need specific attention. The first area that comes to mind is the marketing area. Here is an area that has to be characterized by not only open doors and open minds but also by a high degree of professional competence. To those of you that are specifically engaged in marketing activities, I would like to remind you that it will be essential to gear your marketing efforts to a new level of sophistication. Marketing with the Defense Department requires a newer and higher degree of professionalism than ever before. Ten years ago or less we could describe marketing approaches as ranging from "hard" sell to "soft" sell. These words are still useful today but they are also inadequate to express the newer depth and scope demands of marketing planning, marketing strategy and marketing execution.

First of all if we define marketing as a primary interface activity between industry and Government customer we know that for a proper match it must be capable today of representing in a highly professional way such factors as technical trade-offs; cost effectiveness; interpretation of the companies' management philosophy; policies and procedures; review of past operational technical and fiscal histories; insight and rationale of product improvement factors in relation to in-house research; an understanding of the newer Government processes identified by such jargon as SOR, QMDO, PCP, Formats A and B, TDP, FDP, etc.; insight as to timing of programs; and identification of key personnel and key technological

factors—to name only a few. I will overstate it to some degree—but in the past a marketing man was more apt to be selected for his personality and charm, his ability to entertain and know his way around on a personal contact basis. This to a large degree has fallen away. Golf, to select a particular example, is pleasant during a working day but no longer essential or possible—in fact today a marketing approach that revolves around a golf club membership is more apt to be a distinct negative. The reason is a simple one—the customer is too busy—his time is too important and he would much prefer that you shorten his workload by bringing to him the right data at the right time and with a minimum of fuss. This is not to say that everything must be done in 15-minute increments or less—on the contrary, I am one of the first to rise in support of the fact that some things cannot be done in a short time—some technical and operational problems require lengthy discussion and examination in an informal and free exchange atmosphere. This atmosphere should be subdued, conducive to the problem and in impeccable taste—and it must be efficient in its own time period.

The enormity of the job that we in industry and in the Government are confronted with can be overwhelming. Our mutual charge of responsibility to the Armed Forces for delivering the appropriate equipment, the proper mix of equipment and the best equipment makes demands on efficiency and integrity that are of a new order to that demanded some years ago.

Our Defense Department has gone through a major change—formats and procedures are different—but the real major change is this demand for higher efficiency in that we want higher performance across the board for less money. To make this philosophy felt in depth and to make it stick a few “two-by-fours” have been used to get everyone’s attention. Sometimes the blows struck for freedom and attention have been so hard and so precise that the cry has been heard across the land that the Department of Defense must think that the military is all stupid and that industry is all crooked. Quite the contrary, the ratio of good to bad is a statistic established in this land as overwhelmingly in favor of the good. The military is well recognized for its brilliance and dedication and its insight into military operations and industry is recognized, in turn, for its initiative, spirit of inventiveness, competitiveness, ingenuity and insight into how to build needed industrial capabilities. All that has been asked is that we achieve a new level and scope of preparedness where the limitations of a finite bank require that we solve our problems not by the easy and facile addition of money and an irresponsible broadcast investment in research and development but instead through thoughtful and careful objective study of cost effectiveness and needed or implied adjustments in force structures. It is not a question of centralization or decentralization but rather the proper choice and mix of these two important management concepts in a manner that is consistent with the operational scope we face. Take any successful company, such as your own, you will find in its history that new organizational structure has been demanded as you went from small to medium to large. The U.S. Government and the Defense Department are no different—and because the job has changed in scope we are now making new demands on the professionalism of all personnel and on the sophistication of our organizational structure.

I have made these remarks to set the stage for my statement that Government marketing is coming of age with stiffer requirements than ever before on the selection, training and professional growth of personnel assigned to this field. I find it difficult to conceive of an exceptional marketing man (and who would want anything else) who does not have a technical background, modest operational experience in appropriate management and technical areas and a continuing interest in political and financial matters. He must know his company and its products, preferably on the basis of a tour of duty with the home plant or laboratory—certainly he should no longer be the general purpose salesman who

doesn’t care what he sells just as long as the commission is big. The marketing man that is dedicated to his company and to its product on the basis of integrity and service will be more useful at this important interface and will best serve our joint needs.

In this particular area let me now try to give you some specific advice:

- Raise the sights on your requirements for professional backgrounds, experience and conduct of marketing personnel.

- Be selective of material presented and be very selective of those who are to present it with regard to their qualifications and personal knowledge of the subject. A technical program should be presented by the most qualified technical man in your organization that is directly associated with the program. To have him accompanied by one qualified and professional marketing man for continuity is good; but to have him accompanied by six or seven assorted management, public relations and “salesman” types is a waste of time, money and customer interest. It is recognized that there are often management problems that require management representation. Most often, however, we desire to meet management on its home ground.

- Be responsive to requests from the customer for information and do not misuse the opportunity for the introduction of miscellaneous and irrelevant material that was not asked for.

- Recognize that getting to the top is not always your best marketing strategy. In any program of interest to you there are “key” personnel at all levels with associated timing factors for types of material that the program will ask for. There are no short cuts. Our system of exploratory research, advanced development and engineering has an associated contracting structure and procedure that we feel is not only excellent but necessary. Your ability to understand the system, its philosophies, procedures and demands will make it work to the advantage of all of us. Your ability to do this smoothly and with great sensitivity is a mark of achievement that will measure the degree of professionalism attained by your marketing organization.

- Recognize that contractor selection is a major responsibility of the services and their associated laboratories. We in the Office of the Director of Defense Research and Engineering are primarily interested in concepts and technological process and guidance. We are involved in contractor selection in a limited way and only for special reasons of review and overall evaluation as the matters at hand may affect general trends and directions. Contractor selection is clearly a secondary interest with regard to our responsibilities.

Within the framework of the above remarks let me add that I and my staff will always be glad to see you, to listen, and to talk to you.

We, you and I, have an important job to do. Our interface bluntly requires a refined appreciation of the art of communication. This art can be defined in a double negative way by saying that it should never be: too little, too late, or too much.

Lay it on your marketing personnel that there is no excuse for big mistakes in their profession—the job requires hard work, long hours for adequate preparation and steady professional growth.

This all adds up to a consideration on your part of the cost effectiveness of cutting soft and meaningless entertainment allowances in preference to the value of acquiring a more talented and professionally oriented marketing organization. We would much rather be impressed than charmed. In the language of your military customers, it is time to get the operators out of the act and time to make each of your marketing organizations “operationally ready.”

* * * * *



VAdm. Joseph M. Lyle, USN

Excerpts from address by Vice Admiral Joseph M. Lyle, SC, USN, Director, Defense Supply Agency, at the Kentucky Science and Industry Procurement Conference, Louisville, Ky.

FUNCTIONS OF THE DEFENSE SUPPLY AGENCY

* * * * *

First off, the Defense Supply Agency (DSA) is an independent Defense agency established in the fall of 1961. It is outside the Military Departments, that is the Army, Navy and Air Force, but jointly staffed by military personnel from all the services and by civilian personnel primarily drawn from the Military Departments. In the field of supply, we represent a lateral consolidation of wholesale (these are determination of wholesale requirements, procurement, storage of wholesale stocks and issue to retail customers) for common-use items of food, clothing, fuel, medical, industrial construction, electronics and general supplies. We manage an inventory of nearly 1.3 million items with a value of almost \$2 billion which supports sales to our customers of approximately \$1.8 billion. We annually procure supplies worth about \$3 billion. (The difference between our sales of less than \$2 billion and procurement of \$3 billion is largely the result of our purchase of bulk fuels, lubricants and petrochemicals, which we do not stock and which are turned over directly to the Military Services.) . . .

DSA deals primarily in items of relatively low unit cost—the “bits and pieces” and soft goods—mostly consumables, as contrasted with the more complex and expensive items such as complete or major components of aircraft, missiles, ships, or other weapons of the military. These remain under the management of the Military Departments. We carry out our supply management functions from six Defense Supply Centers located in five major metropolitan areas—Philadelphia, Pa.; Richmond and Alexandria, Va.; and Dayton and Columbus, Ohio.

In addition to management of common-use supplies, we are responsible for the administration of certain logistics service functions and Defense-wide programs for the Military Departments. These include a program which is administered by the Defense Industrial Plant Equipment Center in Memphis to insure the maximum use of DOD-owned industrial plant equipment such as lathes, boring mills, presses, drilling machines, cranes, etc. We operate a central repository of research and technical documents produced by DOD agencies and contractors in the Defense Documentation Center in Alexandria, Va. We also administer the program for the sale of surplus Defense property and manage Defense Contract Administration Services, about which I shall have more to say a bit later.

Briefly, this sums up the major functions of DSA. Now let me concentrate on two of our functions of more specific interest to you—our supply management operations, with emphasis on our procurement activity and our contract administration services.

Our supply program is carried out by the several Defense Supply Centers in the cities I've already mentioned. These centers receive and fill requisitions for the commodities assigned to them. They place contracts with industry for supplies to replace issues from wholesale inventories or for direct delivery to service customers.

DSA's purchases cover a broad spectrum of industry and reach into every major geographic region of the United States. And when you consider that we don't buy major weapons systems, the \$3 billion outlay in Fiscal Year 1965 represents a tidy sum spent for the less sophisticated things supporting our military effort—things that many of you produce or can produce.

At the Electronics Center in Dayton, Ohio, for example, we bought a great variety of electronic components, resistors, capacitors, electron tubes, transistors and other electronic items valued at nearly \$135 million during FY 1965. Our General Supply Center in Richmond, Va., purchased almost \$146 million in materials handling equipment, photographic film, food service equipment and housekeeping supplies for field, shipboard and airborne use during FY 1965.

At the Construction Supply Center in Columbus, Ohio, our purchases included everything from tires and transmissions to roofing and prefabricated buildings. Last fiscal year we spent over \$171 million for construction supplies.

The Defense Industrial Supply Center in Philadelphia bought \$117 million worth of such items as metals, hardware and abrasives, blocks and bearings.

Fuels and petrochemicals are bought from our Defense Fuel Supply Center located at Cameron Station in Alexandria. Our bill for jet fuel, aviation gasoline, auto fuel and diesel fuel amounted to over a billion dollars.

Food, clothing and medical supplies to support the individual soldier, sailor, marine and airman are purchased in Philadelphia. Last year we spent almost \$1.8 billion for these commodities; \$839 million for food, \$317 million for clothing and nearly \$122 million for medical supplies. We buy virtually everything in the food line; in clothing and textiles we purchase clothing, shoes, textiles, tentage, etc. In the medical area we procure all types and kinds of medical, dental and veterinary supplies including drugs, medicine and hospital equipment.

Quite apart from the area of procurement of supplies, we have entered into a new relationship with a large part of the defense industry. This is the result of assignment to DSA of responsibility for management of a consolidated field contract administration service. This function does not include, nor will it affect, the purchase or procurement function itself; it involves the administration of the contracts after they have been awarded.

Also excluded is the administration of contracts for major weapons systems and shipbuilding and construction contracts. These continue to be the responsibility of the individual Military Departments.

The contract administration services we do provide include such things as inspection and acceptance of materiel, accounting for Government property required in the performance of the contract, security clearance of the contractor's facilities and personnel and payment to contractors for goods or services received.

Prior to the assignment of the contract administration services function to DSA, administration of contracts was performed by the Army Procurement Districts, the Navy Inspectors of Material and the Air Force Contract Management Districts. By December of this year some 20,000

personnel from over 150 of these Military Service offices will be consolidated into 11 geographic regions under the management of DSA.

Several benefits will accrue from the consolidated contract administration services. One of these will be lower cost to the American taxpayer as a result of elimination of overlap and duplication of functions. Another, and perhaps the one that might affect you most, is the benefit to contractors of having uniform procedures administered by a single organization.

Our objective in this reduction in duplication of effort, personnel and facilities is to make it easier for you to do business with the Department of Defense and to save you money in the process, both as businessmen and taxpayers. . . .

There are many items on which we have not received the desired degree of competition and I'm sure this is equally true of items purchased by the Military Services. Frequently we have only one or two bidders on items we buy. On some of these there are good reasons for limited competition such as need for special facilities or capabilities, but for most items there are no known factors that are inhibiting competition. Some of the recent examples of items for which there were only one or two bidders are fabric covers for canteens, over \$400,000 worth; aluminum canteen cups, over \$1 million worth; coats for firefighters, \$450,000 worth; wooden tent pins and poles, \$500,000 worth; \$100,00 worth of hand operated can openers and \$100,000 worth of flashlights. I reiterate, these are only some of the examples of items on which we would like to see additional competition (see article, "DSA Seeks New Suppliers, on page 2.). We believe firmly that more competition would be good for us and good for the businessmen who engage in it.

* * * * *

Three New Navy Project Managers Designated

Managers for three new Navy projects have been designated by the Chief of the Bureau of Naval Weapons. The project managers have specific authority and responsibility for the direction and control of their assigned projects. This includes control of assigned resources, integration of planning and programming and the execution of the project in accordance with approval plans, schedules and specified operational requirements.

The new projects and project managers are:

A-6/EA-6 Aircraft Weapon System	
Project -----	Col. Edmond P. Hartsock, USMC Rm. 3075 Main Navy Building 18th & Constitution Ave. NW Washington, D.C. (Area Code 202) OXford 63012
ASROC Missile Weapons System	
Project -----	Mr. Karl E. Yunker Rm. 2105A Munitions Building 19th & Constitution Ave. NW Washington, D.C. (Area Code 202) OXford 68821
Munitions Project ----	Capt. Oliver D. Compton, USN Rm. 3029 Munitions Building 19th & Constitution Ave. NW Washington, D.C. (Area Code 202) OXford 64252

Foreign Visit Clearance Procedure Clarified

Contractors who are planning visits to foreign countries which will involve the disclosure of U.S. classified information are urged to submit visit requests through the Defense Industrial Security Clearance Office (DISCO), Columbus, Ohio, as far in advance as possible of the scheduled date of the trip.

In the past, requests have not been received in time to complete the necessary steps for obtaining permission for visits and have resulted in disapproval.

Suggested lead time prescribed by various governments are: France, 60 days; Germany, 21 days; Ministry of Defense, United Kingdom, 21 days; Canada, 21 days; Ministry of Aviation, United Kingdom, 16 days; and the Netherlands, seven days. Lead times required for other countries will be released by DISCO when they are learned.

Visit requests may be processed in one of the three following ways:

1. The most expedient and acceptable method is to obtain an export license or letter from the Office of Munitions Control, Department of State, for the classified information to be disclosed to a foreign activity *before* submitting a visit request to the International Programs Division (IPD), DISCO. A copy of the license, which serves as a notice to the contractor that authority for disclosure has been staffed with the appropriate user agency, should accompany the contractor's request for visit when it is submitted to IPD, DISCO.

Requests to the Department of State for export licenses or letters may also be processed at the same time visit requests are being processed through IPD. However, in such cases, the contractor should advise IPD that the requests are being processed concurrently. IPD should be immediately notified when the export license or letter has been obtained and a copy submitted without delay.

2. The second method involves obtaining authority for foreign disclosure of U.S. classified information directly from the user agency prior to submitting the visit request to IPD. A copy of the authorization for disclosure should be submitted with the visit request. Requests for disclosure authority may also be processed at the same time that visit requests are being processed but IPD, DISCO, should be informed. Obtaining a foreign disclosure authorization from a user agency does not, however, relieve a contractor of the responsibility of obtaining an export license or letter from the State Department as provided in the International Traffic in Arms Regulation.

3. Contractors may also request that IPD carry out the steps of obtaining necessary authorization for disclosure of classified information. In this case, contractors should allow a minimum of 30 days, in addition to the lead time, for final approval. Information required by paragraph 43c(7) of the Industrial Security Manual should be included in this type of request. Again, it is pointed out that the contractor may require an export license or letter to comply with provisions of the International Traffic in Arms Regulation.

Army Establishes New Procurement Unit

The U.S. Army has established a new procurement unit at the Engineer Research and Development Laboratories, Fort Belvoir, Va.

Staffed mainly by contract specialists, the new unit is responsible for making first-time quantity procurements of new items released by the Laboratories for introduction into the supply system and administering first production run contracts.

The unit, a detachment of the Procurement and Production Directorate of the U.S. Army Mobility Equipment Center in St. Louis, Mo., is located at the Fort Belvoir Laboratories to provide close coordination between procurement and technical personnel through first production of new items.

The R&D Procurement Office, an integral part of the Laboratories, will continue to issue research and development and production-engineering type contracts.

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24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
31																				
OCTOBER 1965							NOVEMBER 1965							DECEMBER 1965						

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Hon. John M. Malloy, Deputy Asst. Secretary of Defense (Procurement), Office of Asst. Secretary of Defense (Installations and Logistics), at Aerospace Industries Assn. Procurement and Finance Meeting, St. Louis, Mo., Oct. 22.

Gen. Earle G. Wheeler, Chairman of the Joint Chiefs of Staff, at Calvin Bullock Forum, New York City, Oct. 28.

Lt. Gen. William J. Ely, Deputy Director for Administration and Management, Office of Director of Defense Research and Engineering, at National Security Industrial Assn. R&D Symposium, Washington, D.C., Nov. 3.

Maj. Gen. W. S. Steele, USAF, Dep. Commandant, Industrial College of the Armed Forces, at Silver Anniversary Meeting, Academy of Management, New York, N. Y., Dec. 28.

ARMY

Gen. Frank S. Besson, Jr., Commanding General, Army Materiel Command, at Meeting of Atamo Chapter, Assn. of the U.S. Army, San Antonio, Tex., Oct. 28.

Hon. Willis M. Hawkins, Asst. Secretary of the Army (Research and Development) at Dinner, Tour and Inspection of Nike-X, Western Electric, Burlington, N.C., Nov. 3-4; and at California Institute of Technology Seminar, "Army R&D," Los Angeles, Calif., Nov. 9-11.

Lt. Gen. William F. Cassidy, Chief of Engineers, at Fort Wood Chapter, Society of American Military Engineers, Dinner Meeting, Fort Leonard Wood, Kan, Nov. 9; and at National Reclamation Assn. Annual Meeting, Kansas City, Mo., Nov. 10.

NAVY

Dr. J. P. Craven, Chief Scientist, Special Projects Office, Bureau of Naval Weapons, at Stevens Institute of Technology, Hoboken, N.J., Oct. 26; and at National Conference to Develop Plans and Ideas for Implementing the Concept of "Sea Grant" Colleges, University of Rhode Island, Kingston, R.I., Oct. 28-29.

Hon. Paul H. Nitze, Secretary of the Navy, at Navy League Meeting, Long Beach, Calif., Oct. 27; at Roll-out of A-7A Corsair II Aircraft, Ling - Temco - Vought, Inc., Dallas, Tex., Nov. 2.

Vice Adm. Paul H. Ramsey, Deputy Chief of Naval Operations (Air), at Navy League Meeting, Baltimore, Md., Oct. 27.

Vice Adm. I. J. Galantin, Chief of Naval Materiel, at Ordnance Research Laboratory, Pennsylvania State University, College Park, Pa., Nov. 11-12; and at Ship Maintenance Conference, Naval Electronics Laboratory, San Diego, Calif., Dec. 15.

Rear Adm. Levering Smith, Dir., Special Projects Office, Bureau of Naval Weapons, at Annual Fall Semi-

nar of Chapter 112, American Institute of Industrial Engineers, Green Bay, Wis., Nov. 17.

AIR FORCE

Hon. Harold Brown, Secretary of the Air Force, at Chamber of Commerce Meeting, Los Angeles, Calif., Nov. 3.

Hon. Alexander Flax, Asst. Secretary of the Air Force (Research and Development), at Space Electronics Symposium, Miami, Fla., Nov. 3.

Gen. John P. McConnell, Chief of Staff, at Air Technology Congress, Hot Springs, Ark., Nov. 17; and at Economic Club, Detroit, Mich., Dec. 6.

Administration of DOD Industrial Defense Program Assigned to Army

The Secretary of the Army has been assigned responsibility for administering the DOD Industrial Defense Program. This assignment is contained in DOD Directive 4160.54, "Department of Defense Industrial Defense Program," which was issued by the Deputy Secretary of Defense on June 26, 1965.

The directive delegates authority to the Secretary of the Army for designating "defense facilities," and for performing other functions assigned to the Secretary of Defense by section 5(b) of the Internal Security Act of 1950, as amended. Also, it assigns responsibility to the Army for determining the industrial facilities included in the DOD Key Facilities List. These responsibilities were assigned heretofore to the Assistant Secretary of Defense (Manpower).

In the past, each Military Department conducted industrial defense surveys of assigned key industrial facilities. Under the terms of the new directive, the Army will survey all facilities included in the program and will coordinate with the Navy, Air Force, or Defense Supply Agency when surveying those facilities in which these organizations have a contractual interest. The reassignment of these functions is intended to improve program effectiveness, promote operational efficiency and achieve economies in program administration.

The Army has announced that the authority to designate "defense facilities" has been redelegated to the Assistant Secretary of the Army (In-

stallations & Logistics). The Deputy Chief of Staff for Logistics is assigned overall responsibility for managing the Industrial Defense Program and for determining the industrial facilities included in the DOD Key Facilities List.

The Army Provost Marshal General is responsible for providing technical guidance pertaining to the Industrial Defense Program. With the exception of a limited number of facilities which are surveyed under the direction of the Office of the Chief of Engineers or Headquarters, U. S. Army Materiel Command, responsibility for directing industrial defense surveys is assigned to Headquarters, U. S. Continental Army Command at Fort Monroe, Va. These surveys will be conducted under the supervision of the Provost Marshal of each of the U. S. Continental Armies.

The Industrial Defense Program is designed to encourage U. S. industry to protect its facilities from sabotage and other hostile or destructive acts. Primary emphasis is given to those production facilities, utilities and services which are of outstanding importance to national defense. With the consent and cooperation of industrial management, these facilities are surveyed annually. An assessment is made of the facility's vulnerability to these hazards and management is furnished guidance and technical assistance concerning the application of physical security and emergency preparedness measures for preventing or minimizing damage from such acts.

NOTES FOR EDITORS

Briefed below are some events and projects within the Department of Defense which may be of interest to writers and editors. If further information on any of these topics is desired, please write to Chief, Magazine and Book Branch, Office of Assistant Secretary of Defense (Public Affairs) Washington, D. C. 20301.

ELEVENTH ANNUAL DEEP FREEZE OPERATION BEGINS

Ski-equipped C-130 aircraft began arriving in Antarctica in September, heralding the beginning of the Navy's eleventh annual Operation Deep Freeze. Their arrival ended a seven-month period of isolation for over 280 scientists and Navy men at five U.S. stations on the South Polar continent. It was the first resupply mission since early March.

Deep Freeze is the Navy's logistic support program for the U.S. Antarctic Research Program, which is conducted under the auspices of the National Science Foundation. Support functions include transportation of personnel and supplies, replacement of equipment, construction and maintenance of facilities and field support of scientific expeditions.

Early in November three U.S. ice-breakers will begin the annual ice-breaking mission to clear the way for surface resupply by Military Sea Transportation Service ships.

ASTRONAUT PROPULSION UNIT UNDER EVALUATION

A simplified personal propulsion unit with fingertip controls designed to enable an astronaut to move about is being evaluated by the Aerospace Medical Research Laboratories at Wright-Patterson AFB, Ohio. The unstabilized device consists of a pair of hand-mounted propulsion nozzles with fore and aft thrust controls. Its power supply is carried in two high pressure gas bottles mounted in a backpack. The wearer controls his movements by aiming and activating the fingertip throttles. Additional control results from changing the position of his arms and by wrist movements.

Tests of the experimental units have already been carried out aboard

Boeing KC-135 and Convair C-131B aircraft flying a parabolic arc to achieve brief periods of weightlessness. Some 25 flights are planned over a six month period to evaluate the operator's visual orientation in a simulated space field. During aircraft tests, dry nitrogen gas is used as the propellant. Under actual space conditions, a hot gas such as hydrogen peroxide probably would be used.

LASER SURGICAL TOOL BEING BUILT BY ARMY

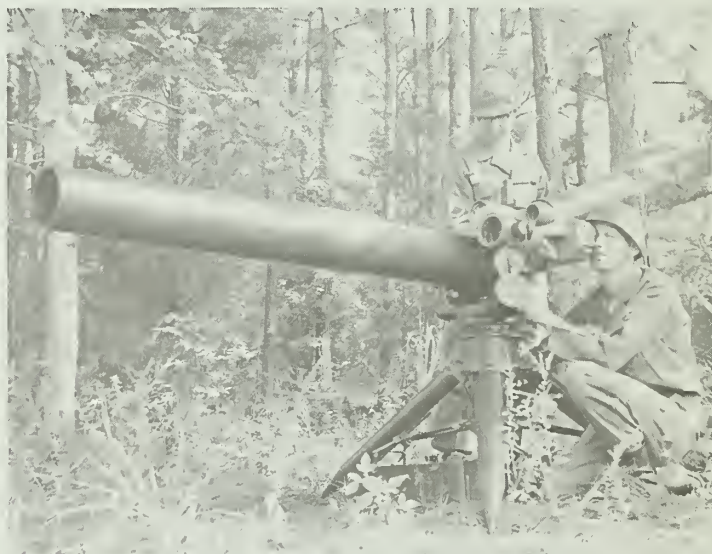
A unique Laser Surgical Tool is under fabrication by the Army Missile Command at Redstone Arsenal, Ala. The tool was developed by the Army in response to a request from the National Cancer Institute after more than a year's cooperative effort by the Missile Command's Laser experts and Institute cancer researchers.

Early experimentation at Redstone Arsenal involved exposure of both internal and external malignant growths in laboratory animals to pulses of infrared radiation from high energy Lasers and proved that

they could destroy some cancer cells under certain circumstances. The Cancer Institute proposes to use the new surgical tool in a research program which might involve treatment of malignant tumors in human beings. However, its effectiveness in treating cancer in humans has not yet been established.

ARMY FIRES SUPERSONIC ANTI-TANK MISSILE

The Army has successfully fired a developmental model of its new supersonic anti-tank missile, the TOW. Center hits were scored on tank size targets more than a mile distant in tests. TOW gets its name from the description: Tube-launched, Optically-tracked, Wire-guided. It is the first supersonic missile guided in flight by a two-wire link between the launcher and the missile. Development of a simplified and highly accurate aiming device makes TOW a major improvement over present anti-tank missiles. The weapon is light enough to be carried by troops and can also be mounted on a variety of ground vehicles.



The TOW Missile System being readied for firing from a ground emplacement on a lightweight launcher mounted on a tripod. The heavy assault, anti-tank weapon also may be mounted on a variety of vehicles, including helicopters. The TOW system is managed by the U. S. Army Missile Command at Redstone Arsenal, Ala. (See last item, Notes for Editors.)

BIBLIOGRAPHY

Defense Procurement Circular No. 33, Aug. 25, 1965. Item 1. Termination of Authority to Qualify as Surety on Federal Bonds. Item 2. Section XX, Part 2—Uniform Procurement Instrument Identification Numbering System; Appendix N—Activity Address Numbers for use in conjunction therewith.

Defense Procurement Circular No. 34, Aug. 27, 1965. Role of the audit function in procurement.

Defense Procurement Circular No. 35, Aug. 30, 1965. Federal Excise Tax Reduction Act of 1965.

Each Defense Procurement Circular (DPC) is designed to place new or changed policies or procedures in effect prior to publication of an Armed Services Procurement Regulation (ASPR) revision. The items in each circular are cancelled after six months, unless specifically eliminated earlier by a new DPC or by publication in the ASPR. ASPR subscribers will receive Defense Procurement Circulars and ASPR revisions through the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Order AD 616 678N, Error Control for Digital Data Transmission over Telephone Networks. Mitre Corp., Bedford, Mass. for the Air Force, May 1965, 56 pp, \$3.

Order AD 615 444N, Laser Meteorological Radar Study. Electro-Optical Systems, Inc., Pasadena, Calif. for the Air Force, Jan. 1965, 93 pp, \$3.

Order AD 617 776N, Transinformation of a Binary Underwater Acoustic Communication Channel Reflected from a Random Surface. University of Rhode Island for the Navy, May 1965, 38 pp, \$2.

Order AD 616 773N, X-Ray Absorption in Dose-Equated Materials. AF Weapons Lab, Kirtland AFB, N. M. May 1965, 160 pp, \$4.

Order PB 166 902N, Acoustic Navigation Systems. Bendix Corp., North Hollywood, Calif., for DOD, March 1964, 42 pp, \$2.

Order AD 617 615N, Feasibility Study of Personnel Identification by Signature Verification. Rome Air Development Center. Griffiss AFB, N.Y. April 1965, 92 pp, \$3.

Order 616 265N, Bibliography of Publications Relating to the Small Group, Third Edition. University of California for the Navy, April 1965, 243 pp, \$6.

Order AD 615 485N, Studies of Burn Skin Protein: Immuno-electrophoretic Analysis of Proteins Extracted from Burned Skin. Medical College of Virginia, Richmond, for the Defense Atomic Support Agency, April 1965, 26 pp, \$2.

Order AD 617 721N, An Introduction to the Geology of the Moon. Air Force Cambridge Research Labs, May 1965, 38 pp, \$2.

Order AD 615 790N, Experimental Study of Longshore Currents on a Plane Beach. Army Coastal Engineering Research Center, Washington, D.C., Jan. 1965, 88 pp, \$3.

Order PNE-242FN, The Sedan Event. Army Corps of Engineers and Lawrence Radiation Lab, Livermore, Calif., for the AEC, April 1965, 103 pp, \$4.

Order AD 617, 686N, Some Aspects of FM Design for Line-of-Sight Microwave and Troposcatter Systems. Rome Air Development Center, Griffiss AFB, N.Y. April 1965, 197 pp, \$5.

Order AD 617 717N, Fabry-Perot Type Laser Modulators. Naval Ordnance Test Station, China Lake, Calif. April 1965, 45 pp, \$2.

Order 617 751N, A Technique for Achieving Very High Antenna Gain—The Adaptively Phased Array. Rome Air Development Center, Griffiss AFB, N.Y. June 1965, 47 pp, \$2.

Order AD 619 025N, Discussion of Dropout Criteria for Magnetic Tape. Pacific Missile Range, Point Mugu, Calif. Aug. 1965, 11 pp, \$1.

Order AD 616 275N, Pseudo-Random DOT Scan Television Systems. Polytechnic Institute of Brooklyn for the Air Force, Dec. 1964, 53 pp, \$3.

Order AD 616 126N, An Easy Way to Determine the Shape of a Driving Function from the Response of a Linear System. Army Harry Diamond Laboratories, Washington, D.C., April 1965, 20 pp, \$1.

Government research and development reports are available to science and industry at:

Clearinghouse for Federal and Scientific Information
Department of Commerce
Springfield, Va. 22151

Navy Data List Available

The Department of the Navy has available for distribution the Navy Authorized Data List prepared in military handbook format. Identified as MIL-HDBK-222 (NAVY), dated July 8, 1965, this document is a master list encompassing every significant technical data requirement (drawings, logistics data, contractors-reports, etc.) which may be procured under Navy contract.

Listed are almost 7,000 discrete data items for which Navy activities have established a need. In its present format, all data items are indexed to specific paragraphs in military specifications and related documents which call for data. This permits ready identification of selected data items on the "Contract Data Requirements List," DD Form 1423, supporting specific procurements.

Navy spokesmen say that the concept employed thoroughly supports the Defense Standardization Program as well as the DOD Configuration Management effort.

Copies of MIL-HDBK-222 (NAVY) can be obtained from the Commanding Officer, U. S. Naval Supply Depot, 5801 Tabor Avenue, Philadelphia, Pa.

Change to TD-1 Directory Available

An amendment to the Directory of DOD Engineering Drawing Repositories (TD-1) has been issued and is available to industry. The directory provides a reference aid to DOD activities and other Government agencies which require copies of engineering drawings in the accomplishment of their assigned missions.

It may also be used as a guide by defense contractors in those cases where terms of contracts or other agreements with procurement or contracting offices have authorized contractors to draw directly upon repositories for drawings required in the performance of contracts.

Copies of the directory may be obtained from the Naval Supply Depot, 5801 Tabor Avenue, Philadelphia, Pa.

Department of Defense Prime Contract Awards by State

Table 1. Net Value of Military Procurement Actions^a

Fiscal Years 1964 and 1965

(Amounts in Thousands)

	Fiscal Year				Current Quarter			
	July 1963 — June 1964		July 1964 — June 1965		April — June 1964		April — June 1965	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
TOTAL U. S. ^b -----	\$27,470,379		\$26,631,109		\$8,053,830		\$8,864,745	
NOT DISTRIBUTED BY STATE ^c ----	3,053,272		3,363,052		885,560		1,102,783	
STATE TOTALS ^d -----	24,417,107	100.0%	23,268,057	100.0%	7,168,270	100.0%	7,761,962	100.0%
Alabama -----	190,681	0.8	165,176	0.7	45,867	0.6	46,431	0.6
Alaska -----	101,545	0.4	74,175	0.3	41,445	0.6	19,205	0.2
Arizona -----	173,825	0.7	176,857	0.8	45,147	0.6	69,952	0.9
Arkansas -----	29,731	0.1	39,284	0.2	7,477	0.1	9,990	0.1
California -----	5,100,650	21.0	5,153,635	22.1	1,405,338	19.6	1,550,282	20.0
Colorado -----	389,511	1.6	249,547	1.1	100,765	1.4	66,113	0.9
Connecticut -----	1,126,054	4.6	1,179,715	5.1	323,185	4.5	383,981	4.9
Delaware -----	30,424	0.1	38,239	0.2	5,025	0.1	12,578	0.2
District of Columbia -----	222,947	0.9	244,108	1.0	67,928	0.9	78,190	1.0
Florida -----	782,591	3.2	633,332	2.7	129,231	1.8	103,363	1.3
Georgia -----	520,169	2.1	662,417	2.8	334,173	4.7	169,718	2.2
Hawaii -----	52,112	0.2	72,214	0.3	21,636	0.3	22,165	0.3
Idaho -----	7,804	*	11,724	0.1	2,956	*	4,271	0.1
Illinois -----	429,201	1.8	421,899	1.8	153,492	2.2	178,892	2.3
Indiana -----	537,940	2.2	604,925	2.6	212,396	3.0	309,462	4.0
Iowa -----	103,392	0.4	133,951	0.6	46,305	0.6	49,385	0.6
Kansas -----	289,045	1.2	229,051	1.0	83,697	1.2	33,676	0.4
Kentucky -----	40,476	0.2	42,749	0.2	9,150	0.1	11,600	0.1
Louisiana -----	181,427	0.7	255,834	1.1	10,451	0.1	22,565	0.3
Maine -----	31,531	0.1	68,771	0.3	10,600	0.1	8,030	0.1
Maryland -----	547,936	2.3	584,212	2.5	211,483	3.0	211,341	2.7
Massachusetts -----	1,032,062	4.2	1,178,728	5.1	322,477	4.5	397,382	5.1
Michigan -----	591,290	2.4	532,896	2.3	194,014	2.7	196,152	2.5
Minnesota -----	217,941	0.9	259,590	1.1	84,116	1.2	109,677	1.4
Mississippi -----	155,911	0.6	152,188	0.7	29,789	0.4	66,518	0.9
Missouri -----	1,349,071	5.5	1,060,781	4.6	73,822	1.0	630,264	8.1
Montana -----	16,422	0.1	69,375	0.3	4,537	0.1	7,725	0.1
Nebraska -----	33,921	0.1	42,708	0.2	5,505	0.1	9,856	0.1
Nevada -----	6,361	*	19,142	0.1	2,196	*	5,792	0.1
New Hampshire -----	64,857	0.3	52,400	0.2	19,278	0.3	13,797	0.2
New Jersey -----	917,561	3.8	820,309	3.5	314,430	4.4	266,778	3.4
New Mexico -----	71,486	0.3	84,137	0.4	17,800	0.2	30,565	0.4
New York -----	2,496,438	10.2	2,229,471	9.6	917,106	12.8	1,002,664	12.9
North Carolina -----	273,516	1.1	288,408	1.2	95,487	1.3	63,353	0.8
North Dakota -----	192,025	0.8	48,997	0.2	7,409	0.1	10,160	0.1
Ohio -----	1,028,946	4.2	863,112	3.7	287,822	4.0	340,284	4.4
Oklahoma -----	122,489	0.5	119,802	0.5	18,769	0.3	20,082	0.3
Oregon -----	29,104	0.1	39,624	0.2	9,130	0.1	14,531	0.2
Pennsylvania -----	883,065	3.6	988,810	4.2	354,928	5.0	326,474	4.2
Rhode Island -----	38,173	0.2	86,323	0.4	19,297	0.3	17,895	0.2
South Carolina -----	51,621	0.2	81,580	0.4	19,057	0.3	17,272	0.2
South Dakota -----	23,308	0.1	21,062	0.1	3,557	*	3,695	0.1
Tennessee -----	193,564	0.8	197,283	0.8	62,312	0.9	35,239	0.5
Texas -----	1,294,431	5.3	1,446,769	6.2	224,443	3.1	315,624	4.1
Utah -----	340,040	1.4	191,173	0.8	110,751	1.6	45,733	0.6
Vermont -----	14,012	0.1	32,202	0.1	7,670	0.1	14,056	0.2
Virginia -----	690,852	2.8	472,583	2.0	382,557	5.3	175,920	2.3
Washington -----	1,085,696	4.5	545,607	2.3	226,447	3.2	139,036	1.8
West Virginia -----	87,327	0.4	90,312	0.4	18,478	0.3	62,996	0.8
Wisconsin -----	177,217	0.7	203,003	0.9	58,434	0.8	60,215	0.8
Wyoming -----	49,408	0.2	7,867	*	8,905	0.1	1,037	*

For Footnotes see Page 25.

* Less than 0.06%

Table 2. NET VALUE OF MILITARY PROUREMENT ACTIONS BY DEPARTMENT^a

July 1964–June 1965

(Amounts in Thousands)

State	Total		Army	Navy	Air Force	Defense Supply Agency	Other Defense Agencies ^e
	Amount	Percent					
TOTAL U. S.^b	\$26,631,109		\$5,504,213	\$8,789,451	\$9,387,385	\$2,701,725	\$248,335
NOT DISTRIBUTED BY STATE^c	3,363,052		792,383	899,192	1,063,809	596,851	10,817
STATE TOTALS^d	23,268,057	100.0%	4,711,830	7,890,259	8,323,576	2,104,874	237,518
Alabama	165,176	0.7	67,538	34,313	34,363	28,962	0
Alaska	74,175	0.3	25,898	8,653	29,131	10,472	21
Arizona	176,857	0.8	49,792	33,361	91,643	2,061	0
Arkansas	39,284	0.2	18,609	961	5,803	13,911	0
California	5,153,635	22.1	490,962	1,793,653	2,540,999	314,209	13,812
Colorado	249,547	1.1	31,999	4,796	196,379	15,898	475
Connecticut	1,179,715	5.1	116,785	785,869	257,039	19,914	108
Delaware	38,239	0.2	4,596	9,838	14,498	9,307	0
District of Columbia	244,108	1.0	66,660	93,652	65,430	1,677	16,689
Florida	633,332	2.7	257,079	65,395	278,864	31,994	0
Georgia	662,417	2.8	65,523	14,702	546,371	35,821	0
Hawaii	72,214	0.3	20,950	41,130	5,149	4,907	78
Idaho	11,724	0.1	1,667	135	1,242	8,680	0
Illinois	421,899	1.8	143,081	113,362	73,842	88,840	2,774
Indiana	604,925	2.6	343,034	102,147	107,160	51,571	1,013
Iowa	133,951	0.6	31,903	38,325	35,969	27,747	7
Kansas	229,051	1.0	25,640	3,953	173,872	25,581	5
Kentucky	42,749	0.2	25,858	2,364	3,151	11,376	0
Louisiana	255,834	1.1	15,385	104,404	6,403	129,642	0
Maine	68,771	0.3	4,850	51,426	6,931	5,564	0
Maryland	584,212	2.5	100,689	292,168	167,982	21,477	1,896
Massachusetts	1,178,728	5.1	242,986	425,767	449,284	57,063	3,628
Michigan	532,896	2.3	348,357	53,483	93,185	35,983	1,888
Minnesota	259,590	1.1	67,288	102,045	58,875	31,382	0
Mississippi	152,188	0.7	60,692	62,400	9,730	19,366	0
Missouri	1,060,781	4.6	120,297	844,310	78,491	17,118	565
Montana	69,375	0.3	51,604	915	14,158	2,698	0
Nebraska	42,708	0.2	3,839	3,181	21,312	14,376	0
Nevada	19,142	0.1	3,075	1,515	14,424	128	0
New Hampshire	52,400	0.2	2,061	30,772	3,529	16,038	0
New Jersey	820,309	3.5	207,270	213,061	295,859	100,258	3,861
New Mexico	84,137	0.4	51,762	3,598	27,444	1,333	0
New York	2,229,471	9.6	277,658	957,111	632,996	184,824	176,882
North Carolina	288,408	1.2	172,313	36,289	19,107	60,095	604
North Dakota	48,997	0.2	11,661	22	34,794	2,520	0
Ohio	863,112	3.7	197,673	260,197	337,930	66,340	972
Oklahoma	119,802	0.5	16,511	8,295	57,937	37,010	49
Oregon	39,624	0.2	2,055	14,245	7,051	16,273	0
Pennsylvania	988,810	4.2	271,223	319,185	281,684	110,297	6,421
Rhode Island	86,323	0.4	8,952	47,079	3,422	25,485	1,385
South Carolina	81,580	0.4	23,007	28,678	4,737	25,158	0
South Dakota	21,062	0.1	5,072	408	14,309	1,273	0
Tennessee	197,283	0.8	57,025	23,387	67,705	49,166	0
Texas	1,446,769	6.2	322,193	236,230	645,562	242,784	0
Utah	191,173	0.8	19,137	2,480	154,816	14,740	0
Vermont	32,202	0.1	26,929	1,293	2,556	1,424	0
Virginia	472,583	2.0	96,707	293,815	45,002	32,674	4,385
Washington	545,607	2.3	20,164	268,673	227,904	28,866	0
West Virginia	90,312	0.4	58,010	12,692	5,555	14,055	0
Wisconsin	203,003	0.9	51,604	44,317	75,603	31,479	0
Wyoming	7,867	*	6,207	209	(-) 3,606	5,057	0

For Footnotes, see Page 25.

* Less than 0.05%

Table 3. NET VALUE OF MILITARY PROCUREMENT ACTIONS BY FISCAL YEAR^a

Fiscal Years 1963, 1964 and 1965

(Amounts in Thousands)

	Fiscal Year 1963		Fiscal Year 1964		Fiscal Year 1965	
	Amount	Percent	Amount	Percent	Amount	Percent
TOTAL, U. S. ^b -----	\$28,107,882		\$27,470,379		\$26,631,109	
NOT DISTRIBUTED BY STATE ^c -----	2,874,642		3,053,272		3,363,052	
STATE TOTALS ^d -----	25,233,240	100.0%	24,417,107	100.0%	23,268,057	100.0%
Alabama -----	194,990	0.8	190,681	0.8	165,176	0.7
Alaska -----	103,476	0.4	101,545	0.4	74,175	0.3
Arizona -----	285,751	1.1	173,825	0.7	176,857	0.8
Arkansas -----	39,114	0.2	29,731	0.1	39,284	0.2
California -----	5,835,670	23.1	5,100,650	21.0	5,153,635	22.1
Colorado -----	444,196	1.8	389,511	1.6	249,547	1.1
Connecticut -----	1,048,449	4.2	1,126,054	4.6	1,179,715	5.1
Delaware -----	47,483	0.2	30,424	0.1	38,239	0.2
District of Columbia -----	238,120	0.9	222,947	0.9	244,108	1.0
Florida -----	583,237	2.3	782,591	3.2	633,332	2.7
Georgia -----	423,290	1.7	520,169	2.1	662,417	2.8
Hawaii -----	45,206	0.2	52,112	0.2	72,214	0.3
Idaho -----	8,634	*	7,804	*	11,724	0.1
Illinois -----	486,067	1.9	429,201	1.8	421,899	1.8
Indiana -----	486,759	1.9	537,940	2.2	604,925	2.6
Iowa -----	130,406	0.5	103,392	0.4	133,951	0.6
Kansas -----	331,687	1.3	289,045	1.2	229,051	1.0
Kentucky -----	55,725	0.2	40,476	0.2	42,749	0.2
Louisiana -----	195,341	0.8	181,427	0.7	255,834	1.1
Maine -----	58,409	0.2	31,531	0.1	68,771	0.3
Maryland -----	606,365	2.4	547,936	2.3	584,212	2.5
Massachusetts -----	1,060,165	4.2	1,032,062	4.2	1,178,728	5.1
Michigan -----	633,047	2.5	591,290	2.4	532,896	2.3
Minnesota -----	273,757	1.1	217,941	0.9	259,590	1.1
Mississippi -----	186,039	0.7	155,911	0.6	152,188	0.7
Missouri -----	686,111	2.7	1,349,071	5.5	1,060,781	4.6
Montana -----	79,349	0.3	16,422	0.1	69,375	0.3
Nebraska -----	33,559	0.1	33,921	0.1	42,708	0.2
Nevada -----	13,143	0.1	6,361	*	19,142	0.1
New Hampshire -----	51,174	0.2	64,857	0.3	52,400	0.2
New Jersey -----	1,251,608	5.0	917,561	3.8	820,309	3.5
New Mexico -----	61,642	0.2	71,486	0.3	84,137	0.4
New York -----	2,500,146	9.9	2,496,438	10.2	2,229,471	9.6
North Carolina -----	258,987	1.0	273,516	1.1	288,408	1.2
North Dakota -----	64,855	0.3	192,025	0.8	48,997	0.2
Ohio -----	1,345,686	5.3	1,028,946	4.2	863,112	3.7
Oklahoma -----	111,204	0.5	122,489	0.5	119,802	0.5
Oregon -----	41,777	0.2	29,104	0.1	39,624	0.2
Pennsylvania -----	887,452	3.5	883,065	3.6	988,810	4.2
Rhode Island -----	46,970	0.2	38,173	0.2	86,323	0.4
South Carolina -----	57,747	0.2	51,621	0.2	81,580	0.4
South Dakota -----	80,630	0.3	23,308	0.1	21,062	0.1
Tennessee -----	183,478	0.7	193,564	0.8	197,283	0.8
Texas -----	1,203,123	4.8	1,294,431	5.3	1,446,769	6.2
Utah -----	427,679	1.7	340,040	1.4	191,173	0.8
Vermont -----	12,258	0.1	14,012	0.1	32,202	0.1
Virginia -----	484,989	1.9	690,852	2.8	472,583	2.0
Washington -----	1,041,581	4.1	1,085,696	4.5	545,607	2.3
West Virginia -----	162,201	0.7	87,327	0.4	90,312	0.4
Wisconsin -----	219,427	0.9	177,217	0.7	203,003	0.9
Wyoming -----	125,081	0.5	49,408	0.2	7,867	*

For Footnotes, see Page 25.

* Less than 0.05%

Footnotes

DOD Prime Contract Award

Footnotes.

^a See Notes on Coverage, below.

^b Includes all contracts awarded for work performance in the United States. The United States includes the 50 states, the District of Columbia, U. S. possessions, the Canal Zone, the Commonwealth of Puerto Rico and other areas subject to the complete sovereignty of the U. S., but does not include occupied Japanese Islands and Trust Territories.

^c Includes contracts of less than \$10,000, all contracts awarded for work performance in the Commonwealth of Puerto Rico, U. S. possessions and other areas subject to the complete sovereignty of the U. S., contracts which are in a classified location and any intragovernmental contracts entered into overseas.

^d Net value of contracts of \$10,000 or more for work in each state and the District of Columbia.

^e Procurement by two Department of Defense Agencies: Defense Communications Agency and Office of the Secretary of Defense. These are included in the procurement statistics series for the first time during Fiscal Year 1963.

^f Revised.

Notes on Coverage.

It is emphasized that data on prime contracts by state do not provide any direct indication as to the state in which the actual production work is done. For the majority of contracts with manufacturers, the data reflect the location of the plant where the product will be finally processed and assembled. If processing or assembly is to be performed in more than one plant of a prime contractor, the location shown is the plant where the largest dollar amount of work will take place. For purchases from wholesale or other distribution firms, the location is the address of the contractor's place of business. For service contracts, the location is generally the place where the service is performed, but for transportation and communications services the home office address is frequently used.

More important is the fact that the reports refer to prime contracts only and cannot in any way reflect the distribution of the very substantial amount of material and component fabrication and other subcontract work that may be done outside the state where final assembly or delivery takes place.

The report includes definitive contracts and funded portions of letter contracts and letters of intent, job orders, task orders and purchase orders on industrial firms, and also includes those made through the General Services Administration. The state data include upward or downward revisions and adjustments of \$10,000 or more, such as cancellations, price changes, supplemental agreements, amendments, etc.

The estimated amounts of indefinite delivery, open-end, or call type contracts for petroleum are included in the report. Except for petroleum contracts, the report does not include indefinite delivery, open-end, or call type contracts as such but does include specific purchase or delivery orders of \$10,000 or more which are placed against these contracts. Also excluded from the report are project orders, that is production orders issued to Government-owned-and-operated facilities such as Navy shipyards. However, the report includes the contracts placed with industry by the Government-operated facility to complete the production order.

Deep Ocean Engineering

(Continued from Page 8)

techniques, is that of placing and operating a nuclear power plant on the sea floor in depths as great as 20,000 feet.

For study purposes we are using a 3MW(e) nuclear thermo-electric power plant designed by Westinghouse Electric Corporation and the Atomic Energy Commission for the Office of Naval Research about five years ago. The plant, as designed, weighs about 300,000 pounds and is 46 feet high, with a maximum diameter of 20 feet. It would operate unattended for perhaps two years. Today a smaller plant could be designed for the same power output.

The study includes how to install it, how heat transfer might be affected by the ocean environment and whether or not fouling would interfere with the plant.

The effort has been carried out by two contractors. The Bechtel Corporation of San Francisco, Calif., has been studying the problem of placing and handling the reactor. The problems of heat transfer and fouling are being studied by C. F. Braun & Company of Alhambra, Calif.

One study visualizes an "installation sub-system," consisting of a bottom weight, the power plant and a buoyant element, all to be lowered from a center well of a ship or barge which contains the hoisting apparatus. The buoyancy element is calculated to be 35 feet high and 26 feet in diameter. It is to be made from a foam.

In an alternate system, a doughnut-shaped submersible, with the axis of the toroid in the horizontal plane, is employed. This submersible design would permit rapid transit in the vertical direction which is important for the work objective.

The experiments to measure heat plumes, heat-transfer co-efficients and fouling effects in water as deep as 6,000 feet will be completed in December 1965. Measurement of heat transfer coefficients and fouling in shallow water, the first experimental step, was begun at San Diego.

In order to make this work meaningful to those who must design or build in the ocean, we have undertaken the preparation of an engineering manual for underwater construction. This is based on existing knowledge and will be updated as significant advances in technology occur.

NCEL's future plans appear in the report of the Undersea Technology Panel—Project Seabed. These plans continue to be aimed at developing the technology required to build structures on the sea floor.

NCEL Port Hueneme recognizes an urgent need for the perfection of in situ soil evaluation, new design methods involving settlement predictions, understanding of materials behavior in the deep ocean environment and development anchorage and foundation systems.

Munitions Export Control

(Continued from Page 6)

on March 1, 1965, the Defense Industrial Security Clearance Office (DISCO) has made considerable changes to better accommodate the needs of industry for more expeditious personnel clearance actions related to contractor visits overseas in connection with export sales. Personnel of that office have worked with us most cooperatively and will further review the requirements of contractor representatives here and abroad in addition to visiting the Military Assistance Advisory Groups and military attaches overseas to obtain a better picture of what is needed in this area.

We hope the foregoing has provided industry with an indication of our joint responsibility in these tasks which require specific additional study and interest on the part of U. S. Government agencies and individual corporations if the problems they present are to be solved to our mutual advantage.

From a military security standpoint, we must remember that the advantage to a foreign government, whose interest might be inimical to the United States, is not confined to a knowledge of political trends and policy on military strategic plans and tactics but also to gathering the industrial "know-how" to produce the superior weapon.



DEFENSE PROCUREMENT

Contracts of \$1,000,000 and over awarded during Month of September 1965:

DEFENSE SUPPLY AGENCY

- 3—Metropolitan Petroleum Co., New York City, \$2,310,600. 240,000 barrels of Navy special fuel oil and 850,000 barrels of #6 bunker fuel oil. Defense Fuel Supply Center, Alexandria, Va.
- 7—Riegel Textile Corp., New York City, \$2,845,596. 4,826,880 yards of cotton sateen cloth. Trion and Scottsdale, Ga., and Enoree S.C. Defense Personnel Support Center, Philadelphia.
- Nantex Riviera Corp., New York City, \$2,182,158. Men's cotton shorts. Greenwood, S.C. Defense Personnel Support Center, Philadelphia.
- 8—Callaway Mills, La Grange, Ga. \$2,800,456. 1,500,000 yards of ballistic nylon cloth. La Grange. Defense Personnel Support Center, Philadelphia.
- Putnam Mills, New York City, \$1,898,710. 891,000 yards of ballistic nylon cloth. Laurens, S.C.; Winnsboro, S.C.; Rhodhiss, N.C.; Shawmut, Ala. and Rockville, Conn. Defense Personnel Support Center, Philadelphia.
- J. P. Stevens & Co., New York City, \$4,104,455. 4,210,000 yards of cotton twill cloth. Great Falls and Wallace, S.C. Defense Personnel Support Center, Philadelphia.
- Burlington Industries, New York City, \$2,309,405. 2,275,000 yards of cotton twill cloth. Cramerton, N.C. Defense Personnel Support Center, Philadelphia.
- 9—Valley Metallurgical Processing Co., Essex, Conn. \$1,392,038. 11,381 drums of magnesium powder. Defense General Supply Center, Richmond, Va.
- The Defense Personnel Support Center, Philadelphia, has issued the following contracts to firms in New York City for cotton sateen cloth: Riegel Textile Corp., \$3,735,683. 7,657,000 yds.; C. M. London Co., \$2,169,706. 4,156,000 yds.; Prestex, Inc., \$1,884,953. 3,450,000 yds.; B. G. Colton, \$1,003,030. 1,923,500 yds.; J. P. Stevens & Co., \$3,439,625. 6,661,000 yds.
- 13—United States Steel, Cincinnati, Ohio, \$1,540,934. 226,200 spools of barbed wire. Pittsburgh, Calif.; Joliet, Ill.; Duluth, Minn.; Fairfield, Ala.; and Donora, Pa. Defense Construction Supply Center, Columbus, Ohio.
- 14—The Defense Personnel Support Center, Philadelphia, has issued the following contracts for wool blankets: Burlington Industries, Cleveland, Tenn. \$2,369,000. 300,000 blankets; Fieldcrest Mills, New York City, \$1,185,500. 150,000 blankets; J. P. Stevens and Co., New York City, \$1,203,594. 173,520 blankets.
- 15—Prestex, Inc., New York City, \$1,319,250. 750,000 yards of wind-resistant, water-repellent, cotton oxford cloth. Westerly, R.I., and Lewiston, Maine. Defense Personnel Support Center, Philadelphia.
- U.S. Rubber Co., Providence, R.I. \$1,729,600. 2,300 five-hundred-gallon collapsible fabric drums. Defense General Supply Center, Richmond, Va.
- 16—Pettibone-Mulliken Corp., Chicago, \$1,544,340. 84 diesel powered fork lift trucks. Defense General Supply Center, Richmond, Va.
- 17—Wanda Petroleum Co., Houston, Tex. \$1,685,851. 19,000,000 gallons of JP-4 jet fuel. Defense Fuel Supply Center, Alexandria, Va.
- 20—Richfield O.I. Corp., Los Angeles, \$1,182,125. 612,500 barrels of fuel oil. Defense Fuel Supply Center, Alexandria, Va.
- 21—Waterbury Button Co., Waterbury, Conn. \$1,151,692. Gold plate finish metal buttons for uniforms. Defense Personnel Support Center, Philadelphia.
- 22—Hyster Co., Portland, Ore. \$1,631,446. 141 gasoline fork lift trucks. Defense General Supply Center, Richmond, Va.
- Lockheed Aircraft Corp., Marietta, Ga. \$1,124,214. 1,173 palletized cargo trailers. Defense General Supply Center, Richmond, Va.
- Dow Chemical Co., Midland, Mich. \$1,593,000. 300,000 gallons of herbicide. Defense General Supply Center, Richmond, Va.
- 23—Coastal States Petrochemical Co., Houston, Tex. \$2,934,930. 34,600,000 gallons of jet fuel. Defense Fuel Supply Center, Alexandria, Va.
- 24—Phalo Corp., Shrewsbury, Mass. \$2,073,517. 47,689 reels of telephone cable. Defense Industrial Supply Center, Philadelphia.
- J. P. Stevens & Co., Inc., New York City, \$3,802,200. 1,050,000 yards of wool serge cloth. Defense Personnel Support Center, Philadelphia.
- 29—Kings Point Industries, New York City, \$1,059,084. 379,600 pairs of men's cotton uniform twill trousers. Defense Personnel Support Center, Philadelphia.
- Putnam Mills Corp., New York City, \$2,979,135. 9,747,298 linear yards of nylon cloth netting. Defense Personnel Support Center, Philadelphia.
- West Point-Pepperell, Inc., New York City, \$1,116,500. 1,250,000 yards of cotton duck cloth. Defense Personnel Support Center, Philadelphia.
- 30—Republic Steel Corp., Chicago, \$2,405,530. Eighty-rod spools of barbed wire. Alabama City, Ala. Defense Construction Supply Center, Columbus, Ohio.

ARMY

- 1—Hughes Aircraft, Culver City, Calif. \$5,837,378. Continuation of research and development on the TOW (a heavy anti-tank assault weapon) system. Tucson, Ariz. and Culver City, Los Angeles Procurement District, Pasadena, Calif.
- Goodyear Tire & Rubber Co., Akron, Ohio. \$2,044,271. 2½-ton trucks, Gadsden, Ala. Army Tank Automotive Center (AMC), Warren, Mich.
- Baldwin-Lima-Hamilton Corp., Philadelphia. \$3,501,951. Design, manufacture and delivery of three hydraulic turbines to the Cordell Hull Dam and Reservoir Project, Carthage, Tenn. Eddystone, Pa. Engineer District, Nashville, Tenn.
- G. L. Tarlton Contracting Co. and W. L. Hiley & Co., St. Louis. \$5,399,737. Work on St. Louis Flood Protection Project. Engineer District, St. Louis.
- Hercules Engine Div. of Hupp Corp., Canton, Ohio. \$1,430,871. Multi-fuel engine assemblies and containers for 2½ and 5-ton tactical trucks. Canton. Army Tank Automotive Center (AMC), Warren, Mich.
- 2—Franklin Contracting Co., Williamstown, N.J. \$1,086,146. Work on Chesapeake and Delaware Canal Project. St. George, Del. Engineer District, Philadelphia.
- 3—Philco Corp., Philadelphia. \$6,564,000. Engineering and personnel services related to an integrated communications system in an overseas area. Electronics Command (AMC), Philadelphia.
- Page Communications Engineers, Inc., Washington, D.C. \$5,760,000. Engineering and personnel services related to an integrated communications system in an overseas area. Electronics Command (AMC), Fort Monmouth, N.J.
- Baldwin-Lima-Hamilton Corp., Philadelphia. \$11,557,380. Design, manufacture and delivery of nine hydraulic turbines (three for the Lower Granite Lock and Dam, Washington, Project; and six for the John Day Lock and Dam, Oregon, Project). Eddystone, Pa. Engineer District, Walla Walla, Wash.
- Otis Elevator Co., Brooklyn, N.Y. \$1,491,452. Evaluation of technical data and production of M16 ballistic computer for the M60 tank. Frankford Arsenal, Philadelphia.
- Chris Berg, Inc., Seattle, Wash. \$3,347,000. Construction of a single story hospital with associated kitchen and laundry facilities. Valdez, Alaska. Alaska Engineer District, Anchorage, Alaska.
- Creighton, Ernst and Wallace, Nashville, Tenn. \$7,357,000. Rehabilitation of facilities at the Volunteer Army Ammunition Plant, Chattanooga, Tenn. Engineer District, Mobile, Ala.
- 7—B-E-C-K and Raber-Kief, Seattle, Wash. \$1,354,020. Construction of an aircraft hangar and associated facilities at Fort Richardson, Alaska. Alaska Engineer District, Anchorage, Alaska.
- 8—H. Earl Parker, Inc., Marysville, Calif. \$1,112,235. Work on Sacramento River Bank Project. Marysville. Engineer District, Sacramento, Calif.
- General Electric, Burlington, Vt. \$2,103,553. Design and development of an armament subsystem for the 30mm automatic gun to be used on UH-1B helicopters. Springfield Armory, Springfield, Mass.
- 9—General Motors, Indianapolis, Ind. \$4,428,768. Engines for light observation helicopters. Army Aviation Materiel Command (AMC), St. Louis.
- 10—Goodyear Tire & Rubber Co., Akron, Ohio. \$2,032,500. Truck tires. Gadsden, Ala. Army Tank Automotive Center (AMC), Warren, Mich.
- Mason & Hanger, Lexington, Ky. \$6,141,274. Ordnance items. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- Bell Helicopter Co., Fort Worth, Tex. \$50,000,000. UH-1 IRO-QUOIS helicopters. Hurst, Tex. Army Aviation Command (AMC), St. Louis.
- 13—Firestone Tire & Rubber Co., Akron, Ohio. \$4,401,113. Track assemblies for M60 tanks. Noblesville, Ind. Army Tank Automotive Center (AMC), Warren, Mich.
- Park Construction Co., Minneapolis, Minn. \$1,200,827. Work on Winona, Minn., Local Flood Protection Project. Engineer District, St. Paul, Minn.
- R.C.A., Burlington, Mass. \$7,753,452. Design, documentation, fabrication and testing of multi-system test equipment for the SHILLELAGH, LANCE and TOW missile systems. Army Missile Command (AMC), Huntsville, Ala.
- Cadillac Gage Co., Warren, Mich. \$3,250,000. 190 armored commando cars. Army Tank Automotive Center (AMC), Warren, Mich.
- Goodyear Tire & Rubber Co., Akron, Ohio. \$5,850,265. Track assemblies for M60 tanks. Muncie, Ind. Army Tank Automotive Center (AMC), Warren, Mich.
- 14—Collins Radio Co., Richardson, Tex. \$1,290,000. Radio terminal sets. Army Tank Automotive Center (AMC), Warren, Mich.
- Allen Campbell Co., Tyler, Tex. \$2,110,200. Construction of a composite medical facility at Holloman AFB, N.M. Engineer District, Albuquerque, N.M.
- General Electric, Syracuse, N.Y. \$1,142,000. Acquisition of radar for NIKE HERCULES. Army Missile Command (AMC), Huntsville, Ala.
- General Electric, Oklahoma City, Okla. \$2,970,331. Design, manu-

- facture, delivery and installation and test of four generators for the Robert S. Kerr Lock and Dam Project. Schenectady, N.Y. Engineer District, Tulsa, Okla.
- 15—Westinghouse Electric, Portland, Ore. \$4,927,141. Design, manufacture, test and delivery of 18 transformers and accessories for the John Day, Little Goose, and Lower Granite Locks and Dam Projects. Muncie, Ind. Engineer District, Walla Walla, Wash.
- Radiation, Inc., Melbourne, Fla. \$7,175,356. Development and fabrication of satellite communication terminals (AN/TSC-54) for the Satellite Communication Agency. Army Electronics Command, Fort Monmouth, N.J.
- Colt's Inc., Hartford, Conn. \$2,072,481. AR-15 rifles with one 20-round magazine. Army Weapons Command (AMC), Rock Island, Ill.
- Reeves Instrument Co., Garden City, N.Y. \$1,152,384. Fuze parts. Harry Diamond Laboratory, Washington, D.C. Ammunition Plant, New Brighton, Minn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- 16—Bell Helicopter Co., Fort Worth, Tex. \$8,238,956. Components and spare parts for UH-1 helicopters. Army Aviation Materiel Command (AMC), St. Louis.
- Federal Cartridge Corp., Minneapolis, Minn. \$2,252,018. Maintenance and support services. Twin Cities Army Ammunition Plant, New Brighton, Minn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- 17—Bowen-McLaughlin-York, York, Pa. \$2,537,594. 8-inch howitzers (M110) and recovery vehicles (M578). Army Tank Automotive Center (AMC), Warren, Mich.
- S. S. Mullen, Inc., Seattle, Wash. \$3,700,126. Work on John Day Lock and Dam Project, Benton County, Wash. Engineer District, Walla Walla, Wash.
- Chamberlain Corp., Scranton, Pa. \$4,181,292. 155mm projectiles. Scranton. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- American Machine & Foundry Co., Brooklyn, N.Y. \$8,176,450. Plant equipment and production of ordnance items. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- 21—Bell Helicopter Co., Fort Worth, Tex. \$1,758,712 and \$1,395,789. UH-1 helicopter components (drive shaft assemblies and blade assemblies). Army Aviation Materiel Command (AMC), St. Louis.
- Olin Mathieson Chemical Corp., New York City. \$1,824,913. Maintenance services at Badger Army Ammunition Plant, Baraboo, Wis. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- 22—Batesville Mfg. Co., Batesville, Ark. \$4,457,635. Ordnance items. Batesville. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- Harvill Corp., Compton, Calif. \$1,454,099. Ordnance items. Washington, Ind. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- Western Electric Co., New York City. \$12,405,408. NIKE X production engineering and production planning. Burlington, N.C. and Allentown, Pa. NIKE X Project Office, Redstone, Ala.
- 23—Rockwell-Standard Corp., Detroit, Mich. \$1,505,395. Transmission assemblies for 2½-ton trucks. Oshkosh, Wis. Army Tank Automotive Center (AMC), Warren, Mich.
- General Motors, Santa Monica, Calif. \$1,944,000. Construction of a re-entry study program. Army Missile Command (AMC), Huntsville, Ala.
- AVCO Corp., Stratford, Conn. \$1,065,900. Combustion liner assemblies for T53 engines for UH-1 aircraft. Stratford. Army Aviation Command (AMC), St. Louis, Mo.
- Continental Motors, Muskegon, Mich. \$2,665,869. Engine assemblies and connecting transmission for M60A1 tanks. Army Tank Automotive Center (AMC), Warren, Mich.
- 24—Western Electric, New York City. \$7,283,304. NIKE X research and development facilities. Burlington and Winston-Salem, N.C. and Allentown, Pa. NIKE X Project Office, Redstone, Ala.
- Hercules Powder Co., Wilmington, Del. \$1,845,321. Maintenance and support services. Sunflower Army Ammunition Plant, Lawrence, Kan.
- Boeing Co., Morton, Pa. \$2,950,830. Chinook helicopter components and assemblies. Army Aviation Command (AMC), St. Louis, Mo.
- Bell Helicopter Co., Fort Worth, Tex. \$3,950,646 and \$5,063,932. Blade assemblies for UH-1 helicopters. Army Aviation Command (AMC), St. Louis, Mo.
- Bell Helicopter Co., Fort Worth, Tex. \$3,000,000. Work and services necessary to provide aircraft components and assemblies, pre-production planning and tooling to protect the delivery requirement and schedule for UH-1E helicopters. Army Aviation Materiel Command (AMC), St. Louis, Mo.
- Scovill Mfg. Co., Waterbury, Conn. \$4,507,561. Ordnance items. Ammunition Procurement and Supply Center (AMC), Joliet, Ill.
- Accurate Die Casting Co., Cleveland, Ohio. \$1,037,702. Ordnance items. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- Carter Carburetor Div. of ACF Industries, St. Louis. \$3,030,394. Ordnance items. Olivette, Mo. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- 27—Olin Mathieson Chemical Corp., East Alton, Ill. \$8,191,808. Ordnance items and maintenance and support services. Charlestown, Ind. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- Eugene Luhr & Co., Columbia, Ill. \$1,339,154. Work on East St. Louis and Vicinity, Ill. Local Flood Control Project. St. Clair County, Ill. Engineer District, St. Louis.
- 28—Western Electric, New York City. \$21,580,464. Design and development of the NIKE ZEUS anti-missile missile. Whippany, N.J. and Santa Monica, Calif. NIKE X Project Office, Redstone, Ala.
- 29—Baxter Construction Co., Houston, Tex. \$1,224,271. Construction of the Atmospheric Re-entry Materials and Structures Evaluation Facility at the Manned Spacecraft Center, Clearwater, Tex. Engineer District, Fort Worth, Tex.
- Highway Products, Inc., Kent, Ohio. \$1,706,231. Aluminum boats to be used for the erection of bridges. Cleveland, Ohio. Army Mobility Equipment Center (AMC), St. Louis.
- Western Electric, New York City. \$1,146,650. Operation of discrimination radar and target track radar. White Sands Missile Range, N.M. NIKE X Project Office, Huntsville, Ala.
- Western Electric, New York City. \$4,367,640. Continuous research and development in connection with the NIKE X Optics Program. Everett, Mass. and Kwajalein Island. NIKE X Project Office, Huntsville, Ala.
- Stanford University, Palo Alto, Calif. \$1,529,200. Research of advance information processing. Stanford University. Defense Supply Service, Washington, D.C.
- 30—Ravenna Arsenal, Inc., Akron, Ohio. \$2,550,425. Maintenance and support services under standby conditions. Ravenna, Ohio. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.
- Sperry-Rand, New York City. \$8,368,144. Classified ammunition. Shreveport, La. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- Thiokol Chemical Corp., Bristol, Pa. \$2,333,645. Illuminating shells. Marshall, Tex. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.
- Mason & Hanger Co., Lexington, Ky. \$8,337,619. Ammunition. Burlington, Iowa. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.
- Atlas Chemical Industries, Valley Forge, Pa. \$4,281,100. Re-activation of the Volunteer Army Ammunition Plant and manufacture of TNT. Chattanooga, Tenn. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.
- Day & Zimmerman, Inc., Philadelphia. \$16,420,527. Classified ammunition. Texarkana, Tex. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.
- Western Electric Co., New York City. \$1,238,214. FY 66 technical publications for use with the NIKE HERCULES System. Burlington, N.C. Army Missile Command, Huntsville, Ala.
- Case Master Body, Inc., Rose City, Mich. \$3,202,510. Watertank trailers. Rose City and Stockton, Calif. Army Tank Automotive Center (AMA), Warren, Mich.
- General Electric, Burlington, Vt. \$6,823,644. Aircraft machine guns, aircraft armament pods and ancillary hardware. Army Weapons Command (AMC), Rock Island, Ill.
- General Dynamics, San Diego, Calif. \$2,198,500. Design, furnishing and installation of an operational TV system for Launch Complex 39. Kennedy Space Center, Merritt Island, Fla. Canaveral District. Corps of Engineers, Merritt Island, Fla.
- Highway Products, Inc., Kent, Ohio. \$1,737,904. Aluminum boats to be used for the erection of bridges. Cleveland, Ohio. Army Mobility Equipment Center (AMC), St. Louis.
- Martin-Marietta, Orlando, Fla. \$2,317,910. Continued installation of modification kits in support of the PERSHING weapons system. Army Missile Command, Huntsville, Ala.
- General Precision, Inc., Little Falls, N.J. \$2,034,960. Hydraulic actuation system for the PERSHING missile system. Clifton, N.J. Army Missile Command, Huntsville, Ala.
- Bendix Corp., Teterboro, N.J. \$1,852,268. FY 66 engineering services for guidance and control for the PERSHING missile system. Army Missile Command, Huntsville, Ala.
- Stanford Research Institute, Menlo Park, Calif. \$1,602,119. Studies for the anti-missile missile system. NIKE Project Office, Huntsville, Ala.
- Kenton Hawaii, Ltd., Honolulu. \$3,863,247. NIKE X range support. Kwajalein. NIKE X Project Office, Huntsville, Ala.
- AVCO Corp., Richmond, Ind. \$1,075,101. Bomb parts. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.
- Caterpillar Tractor Co., Peoria, Ill. \$4,595,920. Tractors. Decatur, Ill. Army Mobility Equipment Center (AMC), St. Louis.
- Philco Corp., Newport Beach, Calif. \$2,000,000. SHILELAGH missile system test equipment. Los Angeles Procurement District, Pasadena, Calif.
- Benton Corp., Troy, Mich. \$1,119,100. Modification kits for the HAWK loader transporter. Troy and Detroit, Mich. Army Tank Automotive Center (AMC), Warren, Mich.
- Sperry-Rand Corp., Salt Lake City. \$4,094,804. Product and production engineering services for SERGEANT missile system. San Francisco Procurement Dist., Oakland, Calif.
- Martin-Marietta, Orlando, Fla. \$17,429,937. Continued engineering support for the PERSHING weapons system. Army Missile Command, Redstone Arsenal, Ala.
- Fisher Chemical Co., New York City. \$1,021,746. Chemical agent CSI, a riot control agent. Great Meadows, N.J. Edgewood Arsenal, Edgewood, Md.
- Eisen Bros., Inc., Hoboken, N.J. \$1,367,338. Projectile assembly parts. Lodi, N.J. New York Procurement Dist., New York City.
- Eastern Tool and Mfg. Co., Belleville, N.J. \$1,005,957. Projectile assembly parts. New York Procurement Dist., New York City.
- General Motors, Detroit, Mich. \$1,532,485. Phase III extension for two months of the design and development of the US-FRG Main Battle Tank. Milwaukee, Wis. Army Tank Automotive Center (AMC), Warren, Mich.
- Bell Helicopter Co., Fort Worth, Tex. \$2,352,000. Machine tools in support of the UH-1 Helicopter program. Army Aviation Materiel Command (AMC), St. Louis.
- Bell Helicopter Co., Fort Worth, Tex. \$9,831,036. Transmission assemblies for UH-1 helicopters. Army Aviation Materiel Command (AMC), St. Louis.
- Kaiser Jeep Corp., Toledo, Ohio. \$46,045,847. 2½-ton trucks. South Bend, Ind. Army Mobility Command (AMC), Warren, Mich.

- Continental Motors, Muskegon, Mich. \$14,939,440. Multi-fuel engines. Army Mobility Command (AMC), Warren, Mich.
- Chrysler Corp., Rock Island, Ill. \$29,691,312. M60A1 tanks with concurrent repair parts. Centerline, Mich. Eynon, Pa and Dayton, Ohio. Army Weapons Command (AMC), Rock Island, Ill.
- Ford Motor Co., Dearborn, Mich. \$25,015,920. 1/4-ton trucks. Highland Park, Mich. Army Mobility Command (AMC), Warren, Mich.
- E. I. DuPont DeNemours, Inc., Wilmington, Del. \$2,182,857. Trinitrotoluene (TNT). Barksdale, Wis. Ammunition Supply & Procurement Agency (AMC), Joliet, Ill.
- Emerson Electric, St. Louis. \$2,771,500. Armament sub-systems for helicopters and inspection and test equipment. Army Weapons Command (AMC), Rock Island, Ill.
- Standard Container, Inc. Montclair, N. J. \$1,780,672. Ammunition boxes. Homersville, Ga. Frankford Arsenal, Philadelphia.
- R. G. LeTourneau, Long View, Tex. \$6,129,695. Production equipment to be installed in the LeTourneau Plant, Long View, Tex. Ammunition Procurement & Supply Agency (AMC), Joliet, Ill.
- Martin-Marietta, Orlando, Fla. \$1,702,092. Ordnance components. Ammunitions Procurement & Supply Agency (AMC), Joliet, Ill.

NAVY

- 1—Zeller Corp., Defiance, Ohio. \$1,001,036. MK 12 projectiles. \$3,032,526. MK 13 projectiles. Defiance, Navy Ships Parts Control Center, Mechanicsburg, Pa.
- United Aircraft, Pratt & Whitney Div., E. Hartford, Conn. \$1,433,757. Spare parts for J-52 jet engines. Navy Aviation Supply Office, Philadelphia.
- United Aircraft, Sikorsky Aircraft Div., Stratford, Conn. \$37,543,400. CH-53A helicopters. Bureau of Naval Weapons.
- Fischback & Moore, Inc., F.M. System Co. div., Dallas, Tex. \$1,898,748. Central command and control systems, and data transmission and communication systems for use in the Navy Tactical Data System. Navy Purchasing Office, Washington, D.C.
- 2—General Electric, Cincinnati. \$1,630,979. Spare parts to support the jet engines used on RA-5 and F4B aircraft. Navy Aviation Supply Office, Philadelphia.
- Lansdowne Steel and Iron Co., Morton, Pa. \$1,831,833. 5-inch projectiles. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- 3—Aerofjet General Corp., Downey, Calif. \$2,269,843. Design and development work on a classified project. Navy Purchasing Office, Los Angeles.
- 7—Sperry Rand Corp., UNIVAC Div., St. Paul, Minn. \$1,942,336. Anti-submarine warfare ship command and control system analysis, design and computer programming, and associated technical data and technical reports. San Diego, Calif., St. Paul, Minn., and aboard various naval ships. Bureau of Ships.
- 8—Emerson Electric, St. Louis. \$3,316,500. Radar receiving units (AN/APR-19) for F-4B aircraft. Navy Purchasing Office, Washington, D.C.
- Cameron Iron Works, Houston, Tex. \$1,015,620. Guided missile boosters. Bureau of Naval Weapons.
- Collins Radio Co., Dallas, Tex. \$5,927,581. Communications equipment. Richardson, Tex. and Cedar Rapids, Iowa. Marine Corps.
- 9—May Aluminum, Inc., El Campo, Tex. \$2,250,000. Aluminum airfield matting. Naval Air Engineering Center, Philadelphia.
- Kaiser Aluminum and Chemical Sales, Oakland, Calif. \$1,390,800. Airfield matting. Halethorpe, Md. Naval Air Engineering Center, Philadelphia.
- United Aircraft, E. Hartford, Conn. \$40,097,808. J52-P-8A engines. \$70,093,200. TF30-P-6 engines. Bureau of Naval Weapons.
- 10—Laboratory for Electronics, Boston, Mass. \$3,838,912. Electronic altimeters for TA-4E, A-6 and C-2 aircraft. Danvers, Mass. Navy Purchasing Office, Washington, D.C.
- 13—Washington Aluminum Co., Baltimore. \$2,785,028. Pallet and mat assemblies for use with Short Airfield Tactical System (SATS). Enterprise, Ala. Naval Aviation Engineering Center, Philadelphia.
- United Aircraft, E. Hartford, Conn. \$3,708,048. TF33-P-11A engines for Air Force aircraft. Bureau of Naval Weapons.
- U.S. Steel, Pittsburgh, Pa. \$1,285,200. Acquisition and installation of equipment for production of ordnance items at McKeesport, Pa. Bureau of Naval Weapons.
- Goodyear Tire & Rubber Co., Akron, Ohio. \$1,359,673. Tires for F-4 aircraft. Navy Aviation Supply Office, Philadelphia.
- Whittaker Corp., Denver, Colo. \$1,642,608. Batteries for the MK 37 torpedo. Navy Purchasing Office, Wash. D.C.
- 15—Guy F. Atkinson Co., Long Beach, Calif. \$1,098,000. Construction of berthing facilities at the Naval Electronics Laboratory, San Diego, Calif. Southwest Div., Bureau of Yards and Docks.
- Anthony Co., Streator, Ill. \$1,428,335. Diesel cranes. Marine Corps.
- 16—Dyson & Co., Pensacola, Fla. \$1,854,832. Construction of an avionics repair shop at Pensacola Naval Air Station. Director, Southeast Div., Bureau of Yards & Docks.
- 17—RCA, Camden, N.J. \$2,412,852. Airborne radio receiving sets and related equipment. Bureau of Naval Weapons.
- Westinghouse Electric, Landsdowne, Md. \$14,702,000. MK48 torpedoes. Baltimore. Bureau of Naval Weapons.
- Boeing Co., Morton, Pa. \$10,740,000. UH/CH-46A helicopters. Bureau of Naval Weapons.
- 20—Baifield Industries, Los Angeles. \$17,988,139. Bomb fins. Shreveport, La. Naval Ordnance Plant, Louisville, Ky.
- Stepfer & Sons, Inc., Brooklyn, N.Y. \$9,579,759. Bomb fins. Naval Ordnance Plant, Louisville, Ky.

- 21—Pascoe Steel Corp., Pomona, Calif. \$1,073,679. Pontoons and necessary accessories and fittings for construction of ramps and barges at Point Hueneme, Calif. Pomona. Navy Purchasing Office, Los Angeles.
- Melpar, Inc., Falls Church, Va. \$4,552,600. Classified electronic equipment. Bureau of Naval Weapons.
- Huyck Corp., Huntington Station, N.Y. \$1,465,450. Computer display sets. Navy Purchasing Office, Wash., D.C.
- 23—ITT Gilfillan, Inc., Los Angeles. \$6,933,054. Radar equipment for installation aboard various naval ships. Bureau of Ships.
- Stewart-Warner Corp., Chicago. \$1,199,958. Components of radar sets (AN/APG 53A) for TA4E aircraft. Navy Aviation Supply Office, Philadelphia.
- 24—Sperry-Rand Corp., Long Island, N.Y. \$1,058,838. Shipboard gun fire control system components and related equipment. Bureau of Naval Weapons.
- 27—General Precision, Inc., Little Falls, N.J. \$1,043,750. Spare parts for the AN/ASN-41 navigation system used on A-4E aircraft. Navy Aviation Supply Office, Philadelphia.
- Lockheed Missiles & Space Co., Sunnyvale, Calif. \$1,839,900 and \$1,303,672. Tool retention program and POLARIS surface support equipment. Sunnyvale. Special Projects Office.
- 28—Douglas Aircraft Co., Long Beach, Calif. \$35,256,030. Production of TA-4E aircraft. Bureau of Naval Weapons.
- Burrman Construction Co., Chula Vista, Calif. \$1,065,289. Construction of a submarine pier facility at the Public Works Center, Naval Submarine Support Facility, Ballast Point, Calif. San Diego. Director, Southwest Div., Bureau of Yards and Docks.
- 29—Aluminum Company of America, Pittsburgh, Pa. \$1,632,000. Aluminum mat extrusions for airfield matting. Navy Air Engineering Center, Philadelphia.
- 30—General Dynamics, Pomona, Calif. \$2,055,208. Retrofit changes for TERRIER and TARTAR missiles. Bureau of Naval Weapons.

AIR FORCE

- 1—Lockheed Aircraft, Marietta, Ga. \$9,500,000. Production of HC-130 and EC-130 aircraft and related equipment. Marietta. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Bendix Corp., Teterboro, N.J. \$1,312,380. Gyroscopes, amplifiers and related ground equipment for T-38 aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- General Electric, Cincinnati, Ohio. \$27,900,000. Production of J-79 engines. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- McDonnell Aircraft, St. Louis. \$4,000,000. Work on an engineering study for the GEMINI portion of the Manned Orbiting Laboratory Program. St. Louis. Space Systems Div. (AFSC), Los Angeles.
- General Electric, Cincinnati, Ohio. \$2,075,000. Engine development for C-5A aircraft. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- United Aircraft, E. Hartford, Conn. \$8,000,000. Development work on propulsion systems applicable to a high-speed advanced manned strategic aircraft. E. Hartford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Sparton Electronics, Jackson, Mich. \$1,078,262. Aircraft Navigation Equipment. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Schenit Rubber Co., Baltimore. \$1,022,250. Production of B-52 aircraft tires. Baltimore. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.
- AVCO Corp., Wilmington, Mass. \$1,000,000. Work on re-entry systems. Wilmington. Ballistic Systems Div. (AFSC), Norton AFB, Calif.
- 2—Hughes Aircraft Co., Culver City, Calif. \$4,391,956. Modification of MINUTEMAN missile test equipment. Culver City. Middletown Air Materiel Area (AFLC), Olmstead AFB, Pa.
- 3—Stanley Aviation Corp., Denver, Colo. \$1,066,750. Production of aircraft escape system kits. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.
- System Development Corp., Santa Monica, Calif. \$14,293,400. Upgrading of the Air Defense Command and Control System. Santa Monica. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.
- 7—American Air Filter Co., St. Louis. \$2,659,000. Manufacture and installation of an environmental control system for MINUTEMAN Squadron 20. St. Louis and Great Falls, Mont. Ballistic Systems Div. (AFSC), Norton AFB, Calif.
- 8—Giannini Controls Corp., Fairfield, N.J. \$1,381,133. Flight data recording systems. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Bendix Corp., Teterboro, N.J. \$1,531,196. F-4 aircraft armament systems. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- American Electric, Inc., Paramount, Calif. \$3,668,000. Ordnance items. El Cajon and Paramount, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.
- 9—Boeing Co., Wichita, Kan. \$8,030,000. Modification kits for B-52 aircraft. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.
- 10—Stromberg-Carlson Corp., Rochester, N.Y. \$1,463,927. A 2000-line, a 2500-line and three 1000-line telephone central offices. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Alvey-Ferguson Co., Cincinnati, Ohio. \$1,580,000. Fabrication, installation and test of air terminal automatic cargo handling equipment. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

- Lockheed Aircraft, Marietta, Ga. \$4,400,000. Procurement of C-130E aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Ryan Aeronautical Co., San Diego, Calif. \$2,350,000. Target drones and related equipment. San Diego. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- General Dynamics, San Diego, Calif. \$4,100,000. Procurement of ATLAS/AGENA space boosters. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- 13—North American Aviation, Anaheim, Calif. \$1,535,841. Repair, maintenance and overhaul of airborne guidance and control systems and ground support equipment for the MINUTEMAN weapon system. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.
- Sylvania Electric Products, Mountain View, Calif. \$3,000,000. Procurement of security subsystems for MINUTEMAN wings II and III. Ballistic Systems Div. (AFSC), Norton AFB, Calif.
- General Electric, Cincinnati, Ohio. \$2,075,000. Development work on engines for C-5A aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- 14—Teledyne, Inc., Gardena, Calif. \$1,084,920. Hydraulic test stands. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- 15—International Harvester, San Diego, Calif. \$1,224,000. Auxiliary gas turbine power units for CH-aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Hercules Powder Co., Wilmington, Del. \$1,000,000. Delivery of flight configuration motors for the second stage of the ATHENA. Bacchus, Utah, Ballistic Systems Div. (AFSC), Norton AFB, Calif. Calif.
- 16—Northrop Corp., Hawthorne, Calif. \$1,749,060. Spare parts for F-5 aircraft. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.
- Boeing Co., Seattle, Wash. \$2,328,240. Engine component improvement for Navy helicopters. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- 17—General Electric, Cincinnati, Ohio. \$2,075,000. Development work on engines for C-5A aircraft. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- 20—Holt Brothers, Stockton, Calif. \$1,110,914. Generator sets and related spare parts. Stockton. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.
- General Motors, Indianapolis, Ind. \$3,500,000. Development of advanced T-56 aircraft engines. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Mitre Corp., Bedford, Mass. \$8,150,000. Research and development for system engineering and technical direction in the field of command and control systems. Arlington, Va. and Bedford. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.
- 21—General Electric, Cincinnati, Ohio. \$9,751,168. Support of B-70 flight test program. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Northrop Corp., Hawthorne, Calif. \$11,600,000 and \$1,360,000. Production of T-39 aircraft and production of F-5 aircraft components. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Hercules Powder Co., Wilmington, Del. \$18,975,000. Production of stage III MINUTEMAN missile motors. Magna, Utah. Ballistic Systems Div. (AFSC), Norton AFB, Calif.
- Cyro-sonics, Inc., Torrance, Calif. \$1,917,554. Modification of liquid oxygen/nitrogen mobile generating plants. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.
- 23—Boeing Co., Wichita, Kan. \$1,000,000. Modification of B-52 bomb bays. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.
- 24—AVCO Corp., Stratford, Conn. \$1,920,479. Production of MARK 11-A re-entry vehicles. Stratford. Ballistic Systems Div. (AFSC), Norton AFB, Calif.
- 27—Burroughs Corp., Paoli, Pa. \$1,175,000. Maintenance and supply support for a radar course directing system. Radnor, Pa. Electronic Systems Div. (AFSC), L. G. Hanscom Field, Mass.
- Lockheed Aircraft, Marietta, Ga. \$2,000,000. Production of C-130 aircraft and related equipment. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- Philco Corp., Palo Alto, Calif. \$3,000,000. Work on a satellite network Space Systems Div. (AFSC), Los Angeles.
- 28—Goodyear Aerospace Corp., Litchfield Park, Ariz. \$3,406,330. Production of radar mapping equipment. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- I.B.M., Washington, D.C. \$1,303,180. Electronic data processing components. Poughkeepsie, N.Y. 2750th Air Base Wing Headquarters (AFLC), Wright-Patterson AFB, Ohio.
- 29—Thiokol Chemical Corp., Huntsville, Ala. \$1,562,000. Work on a solid fuel rocket program. Air Force Flight Testing Center, Edwards AFB, Calif.
- Lockheed Aircraft, Ontario, Calif. \$2,135,314. Modification, inspection and repair of F-101 aircraft. Lake Charles, La., Ontario and Burbank, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.
- Bendix Corp., Teterboro, N.J. \$2,167,200. Production of electronic equipment for C-141 aircraft. Teterboro, N.J. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.
- 30—Atlantic Research Corp., Duarte, Calif. \$4,073,000. Development of special test vehicles for re-entry vehicle systems. Ballistics Systems Div. (AFSC), Norton, AFB, Calif.
- Boeing Co., Wichita, Kan. \$12,000,000. Fatigue testing program for B-52 aircraft. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.
- Sylvania Electric Products, Waltham, Mass. \$5,076,600. Fabrication of the medium frequency antenna subsystem for the sixth MINUTEMAN wing. Waltham and Needham, Mass. and Buffalo, N.Y. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

AFSC Establishes Long Line System Program Office

A Long Lines Communications System Program Office (SPO) has been formed within the Electronic Systems Division, of the Air Force Systems Command, located at L. G. Hanscom Field, Bedford, Mass. Lieutenant Colonel Garland B. Hilton has been named Long Lines Systems Program Director (SPD).

The Long Lines SPO ties together the following wide-band systems being implemented to meet the Defense Communications Agency's requirements: 484N Pacific Area Communications, 486L Mediterranean Communications, 489L Northern Area Communications and 490L Autovon Switches.

Six divisions within the SPO will be headed by the following: Lieutenant Colonel Ernst E. Jahnke, Program Control; Mr. Robert R. Foley, Configuration Management; Lieutenant Colonel A. A. Masters, Engineering; Major Herbert J. Marker, Procurement and Production; Mr. Louis A. Robert, Support Management; and Lieutenant Colonel Vernon M. Smith, Test and Deployment. Mr. George W. Moulton is the Technical Director for the SPO.

Also involved, for engineering consultations when required is the Systems Command's Rome Air Development Center, Griffiss AFB, N. Y.

Under the direction of the Long Lines SPO are more than one quarter billion dollars in contracts for communications that will link more than 400 bases in the Pacific, Atlantic and European areas. The Mediterranean System alone will stretch more than 2,800 miles.

MSTS to Charter New Roll-on/Roll-off Cargo Ships

The Military Sea Transportation Service (MSTS) plans to charter a new design roll-on/roll-off cargo ship to be financed and constructed by commercial maritime interests.

Both the construction and the charter result from an MSTS authorization to engage a commercial operator willing to construct a gas-turbine roll-on/roll-off cargo ship in exchange for an initial seven-year charter. A second stipulation to the authorization was that the charter cost of such a ship be no more than comparable service from conventional ships.

The best offer meeting these conditions, made in response to an invitation to submit offers extended throughout the maritime industry by MSTS, was submitted by American Export Isbrandsten Lines, New York, in a joint venture with Sun Shipbuilding and Drydock Co., Chester, Pa.

The ship to be used by MSTS for point-to-point transportation of vehicular cargo will be powered by two "off-the-shelf" aircraft type turbojet engines and is designed for speeds of more than 25 knots. Propulsion will be accomplished by converting thrust from the turbojets to shaft power by means of an intermediate "free" turbine stage connected to the propeller shaft.

The ship will be the first of its kind to be designed and constructed by a commercial owner for use in off-shore trade under United States flag. It will have a length of 672 feet, a beam of 91 feet and a displacement of 24,500 tons. Completion is scheduled for late 1967. Sun Shipbuilding and Drydock Company will construct the ship at an estimated cost of \$20,000,000.

MSTS currently operates three other roll-on/roll-off ships, the USNS COMET, the USNS TAURUS and the MSTS-chartered SS TRANSGLOBE, all conventionally powered. A fourth roll-on/roll-off ship, the USNS SEA LIFT, also conventionally powered, is now under construction and is expected to enter MSTS service in 1966.

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OFFICIAL BUSINESS



Labor Surplus Awards Steady Despite Area Decline

Department of Defense prime contract awards to labor surplus area firms during FY 1965 amounted to \$3.8 billion, or approximately 16 per cent of total awards of \$24.3 billion.

During this period, the number of major labor market areas which were classified by the Secretary of Labor as having a "substantial labor surplus" declined considerably. These are the areas with the highest potential for Defense contract awards. At the beginning of the fiscal year, 35 major labor market areas and 14 large cities were so classified, compared with a year-end total of 21 major areas and five large cities. Considering this drop of 14 major areas and the single addition among large cities, the awards to firms in labor surplus areas remained remarkably steady. They decreased only fractionally from 16.3 per cent in FY 1964. The 16 per cent proportion of awards compares favorably with the 15.3 per cent in 1963, when the number of major areas was higher, ranging between 48 and 39 during the year.

This drop in major labor surplus areas having substantial labor surplus continues the favorable downward trend dating from March 1961, when a high of 101 major areas were classified as either "persistent and substantial" or "substantial" labor surplus areas.

The improvement in the major areas is paralleled by the situation for the "small" and "very small" areas designated by the Department of Labor which, together, form the entire labor surplus area group. During FY 1965, the number of small areas declined from 147 to 96 and the number of very small areas was reduced from 530 to 428.

The fact that awards to firms in labor surplus areas have remained consistent speaks well of the ability of such firms to compete for and win awards when they submit bids or proposals to make necessary items to support our military forces. They have utilized the services made available to them through the six programs of the Directorate for Small Business and Economic Utilization Policy, in the Office of the Assistant Secretary of Defense (Installation & Logistics), and the specialists assigned to the Military Departments in the field.

Ogden AMA Assumes Management of Minuteman I

The Ogden Air Materiel Area (AMA) of the Air Force Logistics Command has assumed complete logistics management responsibilities for the Minuteman I missile force.

Ogden AMA has handled logistic support, consisting of transportation, supply and maintenance, of Minuteman I since the first unit was turned over to SAC as an operational weapon in October 1962.

The new responsibilities include solving hardware problems by Ogden AMA engineers, procurement of all supplies and services needed for support of the Minuteman I force, investigation of safety problems, recording and scheduling the installation of hardware improvements and budgeting and programming for support of the weapon throughout the remainder of its operational life.

The Air Force System Command's Ballistic Systems Division at Norton AFB, Calif., previously had these responsibilities and will retain them for the Minuteman II program until it is completed.

The Minuteman I force now encompasses 800 missiles located in five wings operated by the Strategic Air Command.